Testoil-ISO 4113

WPP 001/4 MB 5,7 t

1. Edition

PES 6 A 90 D 410 RS2293

RQV 300-1425 AB982DL

supersedes

company:

Daimler-Benz

engine:

OM 352 A (172 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings 2,15-2,25

Port closing at pres	stroke	(2.10-2.30)	mm (from BDC)			
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,1	7,7-7,8	0,3(0,45)			
300 1200/500	(+0,1) 7,8-8,0	0,9-1,5 C, 1-5	0,2(0,4) 0,4(0,55)	1		

Adjust the fuel delivery from each outlet according to the values in [

#### **B. Governor Settings**

Upper rated s Degree of deflection of control lever 1	rev/min Control rod travel mm	Control rod ta travel mm rev/min 2s	Intermediate Degree of deflection of control lever 4	rated spore	Control rod travel mm 4	Lower rated Degree of deflection of control lever 7		Control rod travel	Sliding s rev/min 10	leeve travel  1  mm 11
ca.66	1425 1675	16,0-19,3 0 - 1	-	-	-	ca.10	100 300	min.7,5 5,9-6,1	300	0,6-1,4
ca.61	10,1 4,0	1440-1450 1555-1585					570- 800 370-	630= 2,0 0 - 1	1000 1450	5,0-5,4 8,3
						(3a)	370-	770		

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-roo Test oil ten		Rotational-speed 2b limitation intermediate speed	high idle speed 50 Idle switching point travel			high idle speed (5)		Idle		Torque- travel	control 5
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm			
1	2	3	4	5	6	7	8	9			
LDA 1400	0,4 bar 77,0-78,0 (75,0-80,0)	1440-1450*	LDA 500	0,25 bar 70,0-73,0 (68,0-75,0)	100	13,7-14,3 mm RW					
1200	79,0-82,0 (77,0-84,0)		LDA 1400	0 bar 62,0-64,0 (60.0-66.0)	300 100- (80-	10,0-16,0 220 240)		./.			

Checking values in brackets

\* 1 mm less control rod travel than col. 2

8.77

D. Adjustment Test for Manifold Pressure Compensator

MB 5,7 t

-2-

Test at n =

1400

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
2293 with 982DL	0	0,16 0,22	9,3 - 9,4 9,6 -10,0 11,0 -11,1

Notes

(1) when n ≈

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Testoil-ISO 4113

## Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 16,0 b

2. Edition

PE 10 A 90 D 520/5 LS2362

RQV 1150 AB882R RQV 750 AB966R ./. RQV 250-1250 AB967R ./. supersedes 1.75 company: MAN

engine: D 2530

10 - 9 - 4 - 1 - 8 - 7 - 6 - 3 - 5 - 2 0 - 45- 72-117-144-189-216-261-288-333°

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at pres	troke 7	,5 + 0,1	mm (from BDC)	(	yl. 10!	
Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Suel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mmi
1	2	3	4	2	]3	6
1000	9	5,7 - 6,2	0,4			
	6	2,2 - 3,2				
200	9	3,5 - 4,5				

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

#### RQV 1150 AB882R

Upper rated s	peed			Intermediate	rated sp	eed		Lower rated	speed		Sliding sleeve travel	
deflection of control	rod travel	Control rod travel mm rev/min 3	(1a) (2a)	of control lever	rev/min 5	Control rod travel mm ( 6	•	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3	rev/min	1) mm 11
ca.56	1150 1175	11,3-14 6,0-11		-	-	-		-	-	-	1150	4,7
	1200 1250	0 -7,								4	-	-
								<u>3</u> a				

Torque controi travel a =

mn

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roc Test oil terr		limitation intermediate speed	Fuel deliv		acteristics 5a Starting fuel delivery 6 Idle switching point		Torque- travel	Control rod
rev/min	cm³/1000 strokes .	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
ca.10	mm RW	1160-1170*			100	min.20mmRW		
		!		- A. **				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

6.76

**B. Governor Settings** 

RQV 750 AB966R

	_					1,741				
Upper rated	speed		Intermediate	rated spe	ed	Lower rated	speed		Stiding st	eeve travel
Degree of deflection of control lever	Control rodtravel	travel	Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever	rev/min	Control rod travel mm 3	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.29	725 750	16,0-22,0 9,8-13,8	-	-	-	-	-	-	750	4,6
M M	770 800	2,5-11,0							-	•
						(3a)				

Torque control travel a =

an co

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil tem		Rotational-speed (2b limitation intermediate speed	Fuel delin	very characteristics 5a speed 5b	Starting Idle switching	$\sim$	Torque- travel	Control rod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
725	110,5 - 111,5	745-755 *						
						1		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

#### **B. Governor Settings**

#### RQV 250-1250 AB967R

Upper rated :	speed		Intermediate	rated spe	ed	Lower rated	speed		Stiding sl	eeve travel
Degree of deflection		Control rod ta	Degree of deflection	ł	Control rod travel	Degree of deflection	1	Control rod travel		1
of control lever	rod travel	rev/min (2a)	of control lever	rev/min		of control lever	rev/min	mm ③	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 50	1275 1320	14,3-17,3 11,8-14,5		-	-	ca.13	100 200	7,2-10,5 5,5-8,6	1275	8,4
	1370 1410 1500	4,3-10,9 0-7,8					350 410	0-3,2	-	-
						3a)		-		

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil tem rev/min	stop p. 40°C (104°F) 2	Rotational-speed (2b) Fuel delivery chara high idle speed (5b) rev/min (4a) rev/min (2b) Fuel delivery chara high idle speed (5b) rev/min (cm²/100)		very characteristics (58) speed (56) cm <sup>3</sup> /1000 strokes	switchir		Torque- travel	Control rod travel
1	2	3	4	5	6	7	8	9
1250	83,0 - 84,0	1290-1300 *						

Checking values in brackets

estoil-ISO

#### **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 MB 5,7 s

5. Edition

PES 6 A 90 D 410 RS2293

RQV 300-1425 AB946L, ..947L,948L,949L supersedes

8.77 Daimler-Benz

engine:

124kW(168 PS) OM 352 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

S2293Z with 946L s.a. MB 5.7 s3

Port closing at pres	stroke	(2.10-2.30) mm (from BDC)							
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6			
1375	10,8	7,4 - 7,5	0,3(0,45						
300 500	+0,1 7,8-8,0 	0,9 - 1,5 C, 4-5	0,2(0,4) 0,4(0,55)	ł					

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

..946 L

Upper rated speed Intermediate rated sp				rated sp	eed	Lower rated	speed		Sliding sleeve trave		
defiection	rev/min Control rod travel mm	Control rod travel mm rev/min	(a) (2a)	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mrn ①
1	2	3		4		6	7	8	9	10	11
ca.66	1425 1800	16,0-19 0 - 1	,4	,	•	-	ca.10	100 300	min.7,3 5,7-5,9		1,4-2,2
ca.61	9,8 4,0 1700	1435-14 1535-15 0 - 1					(3a)	570-6 750	0 - 1	<u>1450</u> -	8,2

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil ten	1 stop np. 40°C (104°F) 2	Imitation intermediate speed		peed (5b)	Starting Idle switchin	fuel delivery 6	Torque- travei	Control cod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 44	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7 mmRW	8	9
LDA 1375	0,7 bar 74,0-75,0 (72,0-77,0)	1435-1445*	LDA 500	0 bar 54,0-56,0 (52,0-58,0)	100	13,7-14,3		
					100-2	220 (80-240)		·

Checking values in brackets

Testoil-ISO 4113

)	
,2	
,5	

Upper rated s	í i	Control and	Intermediate	rated spe	ed Control rod	Lower rated	speed	Control rod	Sliding sl	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min 2a	of control	rev/min	travel	Degree of deflection of control lever	rev/min	mm 3	rev/mເກ 10	mm
1	2	3	14	5	6	<u> </u>	8	9	10	
ca.68	1425 1800	16,0-19,0	-	-	-	ca.10	100	min.7,3	300	0,6-1,2
		0 - 1					300 570-	15,7-5,9 630= 2,0	800	4,0-4,5
ca.66	9,8	1435-1445	1		1		750	0 - 1	1420	8,2
	4,0	1530-1560	1	1	•					
	1650	0 - 1							-	-
						(3a)				

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load di Control-roi Test oil ten rev/min 1	stop	Rotational-speed 2b limitation intermediate speed 1ev/min 3	Fuel deliv character high idle s rev/min 4	istics	idle switchin	cm³/1000 strokes	Torque- travel rev/min 8	Control rod travel mm
LDA 1375	0,7 bar 74,0-75,0 (72,0-77,0)	1435-1445 947: 700 948: 700/ 0,4bar 949: 1300	LDA 500	0 bar 54,0-56,0 (52,0-58,0)	100 100-2	13,7-14,3 220(80-240)		

Checking values in brackets

\* 1 mm less control rod travel than co: 2

#### D. Adjustment Test for Manifold Pressure Compensator

Testatn =

1375

rev/min decreasing pressure - in bar gauge pressure

AAAAA	<del></del>	
Setting	Measurement	diminution Control rod travel- difference
Gauge pressure = bar	Gauge pressure = bar	mm
·0 <b>,</b> 68		10,8 - 10,9
	0,22 - 0,23	10,6 - 10,7
	0	10,4 - 10,5
		Ŷ
	Gauge pressure = bar	Gauge pressure = bar Gauge pressure = bar  .0,68  0,22 - 0,23

En

#### **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 MB 5.7 v 2

4. Edition

PES 6 A 90 D 410 RS 2596

ROV 300-1400 AB 1066 DL

supersedes 10.80

Daimler-Benz company:

OM 352 A engine:

126 kW (171 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings
(1,95-2,15)
Port closing at prestroke
2,00-2,10 mm mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	12,4 <sup>+0,1</sup>	7,8 - 7,9	0,3(0,45)			
300	8,9-9,1	0,9 - 1,5	0,2(0,4)			
500	13,6+0,1	C, col.4-5	0,4(0,55)			
500	12,3+0,1					

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

deflection	rev/min Control	Control rod (a	genection	rated sp	Control rod travel	Lower rated Degree of deflection	speed	Control rod travel	Sliding s	leeve travel
of control lever	rod travel	mm rev/min 2a 3	of control lever	rev/min 5	mm 4	of control lever 7	rev/min	mm 3	rev/min 10	mm 11
Max.	1400 1750	15,2-17,8 0 - 1	-	•		ca.19	100 300	min.10,5 8,9-9,1	300 500 1450	1,2 2,5-2,7 8,6
ca.62	11,4 4,0	1440-1450 1580-1610				400-470 3a		·		

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil ten		limitation intermediate speed	high idle s	very characteristics 5a	Starting Idle switchir	. 0	Torque- travel	Control (5) Control rod
rev/min 1	cm³/1000 strokes .	rev/min 4a	rev/min 4	cm <sup>3</sup> /1 <b>000 strokes</b> 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	mm +0,1
LDA 1400	0,7 bar 78,0-79,0 (76,0-81,0)	1440-1450*	LDA 500 LDA 500	0,7 bar 72,5-74,5 (70,5-76,5) 0 bar 58,0-60,0 (56,0-62,0)	100	72,25-82,25 15,8 - 16,2 RW 220(80-240)	1400 1200 1000 500	12,5

Checking values in brackets

#### **B.** Governor Settings

Upper rated s	peed	1		Intermediate	rated spe	ed	Lower rated	speed	i	Sliding s	leeve travel
deflection of control	rev/min Control rod travel	Control rod travel mm	(a)	Degree of deflection of control		travel	Degree of deflection of control		Control rod travel		0
lever	mm	rev/min	(2a)	lever	rev/min	mm (4)	lever	rev/min	mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
							<b>3</b> a				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil tem	stop	Rotational-speed (2b) limitation intermediate speed	Fuel delic characte high idle	ristics	Starting Idle switching	fuel delivery 6	Torque- travel	Control roc
rev/min	cm <sup>3</sup> /1000 strokes	rev/min (4a)	rev/min	cm³/1000 strokes	.rev/min	cm³/1000 strokes	rev/min	travel mm
			-			/	8	9
					{			
							1	

Checking values in brackets

\* 1 mm less control roe travel than col. 2

#### D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500 rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting  Gauge pressure = bar	Measurement  Gauge pressure = bar	diminution Control rod travel- difference mm
2596 with 1066 -1 DL	.0,7	0,35 0,2 0	13,6 - 13,7 13,2 - 13,3 12,5 - 12,7 12,3 - 12,4

En'

WPP 001/4 MB 8,7 1

1. Edition

PE6A90D410RS2124

1 - 5 - 3 - 6 - 2 - 4

0 - 60 - 120 - 180 - 240 - 300

RQ 450/1250 AB 812

supersedes

company:

Daimler-Benz

OM 360 engine

141 kW(192 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings (2,10-2,30)

Port closing at prestroke

2,15-2,25

mm (from BDC) RW 10,5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,2	8,6 - 8,7	0,3(0,45)			
450 800	+0,1 5,9-6,1 	C, col.4-5	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Cantral and	itting point 1	fest specification	fdls speed regulation Setting point   Test specifications   5				Torque control		
rev/min mm rev	rod travel r	Control red travel rem rev/m	iin		Control red travel rnm 8	rev/min	Control rod travel	rev/min	Control rod travel
700 15,6-16,4	700 16,0	9,2 1299 4,0 134		450	6,0	100 450 600 500-	min.7,5 5,9-6,1 0 -1,0 540 2,0		

Torque-control travel

Speed regulation: At

1 mm less control

#### C. Settings for Fuel Injection Pump with Fitted Governor

governor	lelivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel delivery characteristics			Starting f	
rev/min 1	cm³/-1000 strokes	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5		rev/min 6	Control rod travel cm <sup>3</sup> /1000 strokes:/ mm
1250	86,0-87,0 (84,0-89,0)	800	800	83,5-86,5 (81,5-88,5)			

Checking values in brackets

11.80

BOSCH

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#### **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 MAN 12,8 d 3. Edition

PE 8 A 90 D 320 LS2514

ROV 250-1250 AB993DR

250-1250 AB852DR

supersedes 5.78

company: M A N

D 2538 M/MF 190 kW (256 PS)

8 - 7 - 2 - 6 - 3 - 5 - 4 - 1 +0,50  $0 - 45 - 90 - 135 - 180 - 225 - 270 - 315^{\circ}( \pm 0,75)$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

1,50-1,60 (1,45-1,65)

Cy1.8

Port closing at pres	troke (1	45-1.65)	mm (from BDC)	*	Cy1.8	
Rotational speed  **********************************	Control rod travel fnm 2	Fuel delivery With 933DR cm³/100 atrokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery with 852DR cm <sup>3</sup> /100 strokes 3	Spring pre-tentioning (torque-control valve) mm 6
1250	11,5	10,1 - 10,3	0,3(0,45)	11,5	10,1 - 10,3	
	+0,5			+0,1		
250	7,4-7,6	0,9 - 1,5	0,2(0,4)	7,4-7,6	0,9-1,5	
800/500		C, 4-5	0,4(0,55)	)		

Adjust the fuel delivery from each outlet according to the values in [

#### **B. Governor Settings**

993DR

	rev/min Control rod travel	travel		rev/min	ced Control rod travel mm 4	Lower rated Degree of deflection of control lever 7	speed rev/min 8	Control rod travel mm 3	Sliding s	mm 11
ca.50	1275 1500	14,4-17,4 0 - 1	•	•	-	ca.11		min.7,5 5,9-6,1 370 = 2,0		0,5-1,2 4,4-4,8 8,3
ca.48		1290-1300 1360-1390				<b>3</b> a	450	0 - 1	5	

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil tem		Rotational-speed 2b timitation intermediate speed		rery.characteristics 50 peed 50	Starting Idle switchin		Torque- travel	control 5  Control rod travel
rev/min	cm <sup>3</sup> /1000 strokes .	rev/min 4	rev/min cm³/1000 strokes		rev/min 6	ev/min cm <sup>2</sup> /1000 strokes		# 0,1
1250	102, 5-163, 5 (100, 5-105, 5	1290-1300*	800 500	95,5- 98,5 (93,5-100,5) max. 94,0	•	134,25-144,25 7,0 mm RW	1250 900 500	11,5 11,0 11,2
					100-	-170 (80-190)		./.

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung. C by Robert Bosch GmbH, D-7 Stuttgert 1, Postfech 50. Printed in the Federal Republic of Germany. Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

Upper rated s	peed		Intermediate	rated spe	ed	Lower rated	speed		Clining	
deflection		travel	Degree of deflection of control			Degree of deflection of control		Control rod travel	Situing Si	leeve travel
	ww	7. 1		rev/min	mm 🕢	lever	rev/min	mm ③	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.50	1275	14,4-17,4	-	-	-	ca.13	100	min.7,2	200	0.5-1.2
1	1500	0 - 1						5,6-5,8	700	0,5-1,2 4,4-4,8
							450	370=2,0 0-1	1200	8,3
ca.44		1290-1300								
	4,0	1350-1380				(3a)				

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rec Test oil terr	Stop	Rotational-speed (2b) Ilmitation Intermediate speed				fuel delivery 6	Torque- travel	Control rod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
1250	101, 5-102, 5 ( 99, 5-104, 5)	1	500	78,0 - 86,0 (76,0 - 88,0)	250	18,0-18,6 7,0 -170 (80-190)	0	<del>-</del>

Checking values in brackets

\* 1 mm less control rod travel than col. 2

#### **B. Governor Settings**

Upper rated s	peed			Intermediate	rated spe	ed	Lower rated	i speed		Stiding	leeve travel
of control	rod travel	Control rod travel mm rev/min	1a (2a)	Degree of deflection of control lever		travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm (1)
1	2	3		4	5	6	7	8	9	10	11
							(3a)				

Torque control travel a =

\_\_\_\_

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil ter		Intermediate speed	Fuel deliv	very characteristics 5a		fuel delivery 6	Torque- travel	Control rod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min (4a)	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

\* 1 mm less control rod travel than col. 2

A 14

#### **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 2. Edition

10.77

PES 6 A 90 D 410 RS 2340

RQV 275-1200 AB 972 L 250-1300 AB 961 DL company:

OM Brescia CP3/100-136PS

engine:

CP3/130

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery (1) cm³/100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery (2) cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm min-1 6
1200	10,9	7,5 - 7,7	0,3(0,45)	10,3-10,4	7,4 - 7,6	-n 1300
275 1100/500	(+0,1) 8,0-8,2	i	0,2(0,4) 0,4(0,55)	7,8-8,0	0,9 - 1,5	−n 250

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

275-1200 AB 972 L

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed		Stirting	leeve travel
deflection	rev/min Control rod travel	Control rod (a)	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		①
lever	mm	rev/min 2a	lever	rev/min	mm 4	lever	rev/min	mm ③	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.68	1 250 1 550	15,0-18,0 0 - 1	-	-	-	ca.16		min.9,7 8,0-8,2 500 =2,0	300 800 1260	0,8-1,8 3,8-4,2 8,2
ca.64	9,9 4,0	1240-1250 1325-1335				(3a)	800 300-6	0 - 1		

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil ten		Rotational-speed 2b limitation intermediate speed	Fuel deliv	very characteristics 5a	Starting Idle switching		Torque- travel	control 5
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	trave! mm
1	2	3	4	5	6	7 mmRW	8	9
1200	75,5-76,5 (73,5-78,5)	1240-1250*			100	14,7-15,3		
					100-	 -195(80-215)		

Checking values in brackets

B. Gov	ernor	Setting	gs					25	0-130	O AB	961	DL (2)	
Upper rated	speed			Intermediate	rated spe	ed		Lower rated	speed			Slidings	leeve travel
Degree of deflection	Control	Control rod	(la)	Degree of deflection		Control ro travel	d	Degree of deflection of control		Control travel	rod	J	1
of control lever	rodtravel mm	rev/min	(2a)	of control lever	rev/min	mm	4	lever	rev/min	mm	3	rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
ca.66	1340 155	15,2-17 0 - 1		-	-	-		ca.21	100 250 790-	  min.  9,9-  850=	10,1		0,4-1,5 3,5-4,0 8,2
ca.61	9,3	1340-13 1430-14						(3a)	1050 250-	0 -	1		-,-

Forque control travel a =

0,2 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil ten	d stop	Rotational-speed (2b) timitation intermediate speed	Fuel deliv	rery characteristics 5a speed 5b	Starting idle switchir	$\sim$	Torque- travei	Control rod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm3/1000 strokes	rev/min 8	travel mm
1300	74,5-75,5 (72,5-77,5)	1350-1350*	1100	74,0-76,0 (72,0-78,0)	100	109,25- 119,25	1300	10,8-10,4
			500	61,5-63,5 (59,5-65,5)	100-1	70(80-190)	500	10,5-10,6
								,

Checking values in brackets

\* 1 mm less control rod travel than col 2

#### **B.** Governor Settings

Upper rated s	speed			Intermediate	rated spe	ed	Lower rated	speed		Slidings	leeve travel
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	(1a) (2a)	Degree of deflection of control lever	rev/min		Degree of deflection of control lever	rev/min	Control rod travel mm 3	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
		V									
									ı		
							За				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil terr		intermediate speed	Fuel deliv	very characteristics 5a speed 5b	Starting Idle switchir	fuel delivery 6 ng point	Torque- travel	Control rod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min (4a)	rey/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
	<u> </u>							
		1			<u> </u>			

Checking values in brackets

WPP 001/4 MB 5,7v2

2. Edition

supersedes

4.80

company:

Daimler-Benz

engine:

OM 352A

126 kW(171 PS)

PES 6A 90D 410RS 2596 ROV 300-1400 AB1066-DL

1 - 5 - 3 - 6 - 2 - 4  $0 -60 -120 -180 -240 -300 \pm 0,50 (0,75)$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings (1,95-2,15) Port closing at prestroke 2,00-2,10) mm

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	13,1+0,1	7,6 - 7,7	0,3(4,5)			
300 500/500	8,9-9,1 -	1,1 - 1,7 C, col.4-5	0,2(0,4) 0,4(0,55)		·	

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed		Slidina s	leeve travel
deflection	rev/min Control	Control rod (1a)	Degree of deflection of control		Control rod travel	Degree of deflection of control	<u> </u>	Control rod travel		1
lever	rod travel mm	rev/min (28)	lever	rev/min	mm (4)	lever	rev/min	mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.68		15,2-17,8	ı	-	-	ca.16	100	min.10,5	300	1,2
	1800	0-1					300	8,9-9,1	500	2,5-2,7
ca.62	12,1	1440-1450					740-8	800 =2,0	1450	8,6
	4,0					400-470				
						(3a)				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten		Rotational-speed 2b limitation intermediate speed	Fuel deli- high idle s	very characteristics 5a speed 5b	Starting Idle switchir		Torque- travel	control 5
rev/min 1	cm <sup>3</sup> /1000 strokes	rev/min 48	rev/min 4	cm <sup>3</sup> /1 <b>000 strokes</b> 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	travel mm g +0,2
LDA 1400	0,7 bar 76,5-77,5 (74,5-79,5)	1440-1450*	LDA 500 LDA 500	0,7 bar 72,5-74,5 (70,5-76,5) 0 bar 58,0-60,0 (56,0-62,0)	100 100-2	72,25-82,25 220(80-240)	1400 1225 1050 500	-

Checking values in brackets

#### D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

MB 5,7 v 2

-2-

Pump/governor	Setting  Gauge pressure = bar	Measurement  Gauge pressure = bar	diminution Control rod travel- difference mm (1)
2596 with 1066-1DL	0,7	0,35 0,225 0	14,3 - 14,4 14,0 - 14,1 13,4 - 13,6 13,0 - 13,1

Notes.

Testoil-ISO 4113

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

A22

#### **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 MB 5.7 3. Edition

PES 6 A 90 D 410 RS 2596 RQV 300-1400 AB 1066 DL

company:

3.80 Daimler-Benz

OM 352 A

(124 kW(169 PS)

1 - 5 - 3 - 6 - 2 - 4 je  $60^{\circ}$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke	2,00-2,10 (1,95-2,15)	mm (from BDC	C)
Rotational appeal   Control rod	Fuel delivery	Difference	C

Cv	1	_	6
U.I'			

Port closing at pres	troke (	1,95-2,15)	mm (from BDC)		71.0	
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	12,9-13,0	7,1 - 7,2	0,3(0,45)			
500/500	8,2-8,4 	0,9 - 1,5 C. 4-5	0,2(0,4) 0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

per rated s	speed			Intermediate	rated sp	ed	Lower rated	speed	1	Sliding	sleeve travel
deflection	rev/min Control	Control red travel	18	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		1
of control lever	rod travel mm	mm rev/min (	<b>(28)</b>	of control lever	rev/min	mm (4	of control lever	rev/min	mm (3	rev/min	mm
1	2	3		4	5	ອີ	7	8	9	10	11
ca.68	1400 1750	15,2-17, 0 -	8	-	•	-	ca.15		min.9,8 8,2-8,4 790= 2,0	300 485 1470	1,2-1,3 2,4-2,6 8,3
ca.60	11,9 4,0	1440-145 1575-160					400-460 3a				

Torque controi travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten		Rotational-speed 20 limitation intermediate speed	Fuel delivingh idle s	rery characteristics 5a peed 5b	Starting Idle switching		Torque- travel	control 5
rev/min 1	cm³/1000 strokes .	rev/min 4a	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	travel mm 9 +0,2
LDA 1400	0,7 bar 71,5-72,5 (69,5-74,5)	1440-1450	LDA 500 LDA 500	0,7 bar 70,5-72,5 (68,5-74,5) 0 bar 56,0-58,0 (54,0-60,0)	100-4	72,25-82,25 220(80-240)	1400 1225 1050 500	12,9 13,2 13,7 14,1

Checking values in brackets

#### D. Adjustment Test for Manifold Pressure Compensator

Testatn ≈

500

rev/min decreasing pressure ~ in bar gauge pressure

MB 5,7 v

-2-

			11D 357 Y
Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
2596 with 1066	0,7		14,1 - 14,2
		0,35	13,8 - 13,9
		0,23	13,2 - 13,4
		0	12,8 - 12,9

Notes

Testoil-ISO 4113

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

A24

En

A.2.4

**Testoil-ISO 4113** 

WPP 001/4 MB 5,7 v 2

3. Edition

PES 6 A 90 D 410 RS 2596

ROV 300-1400 AB 1066-1DL

supersedes 8.80

1 - 5 - 3 - 6 - 2 - 4

Daimler-Benz

 $0 -60 - 120 - 180 - 240 - 300 \pm 0,50 (0,75)$ 

OM 352 A

126 kW (171PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	12,4+0,1	7,6 - 7,7	0,3(4,5)			
300 500/500	8,9-9,1 	1,1 - 1,7 C, col.4-5	0,2(0,4) 0,4(0,55)	Į.		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated :	speed		Intermediat	Intermediate rated speed				Lower rated speed				Sliding sleeve travel	
Degree of deflection of control	rev/min Control rod travel	Control rod (18	of control		Control re travel	od _	Degree of deflection of control		Contro travel	lrod	Siluniy S	1	
lever	mm	rev/min (2	lever	rev/min	mm	(A)	lever	rev/min	mm	(3)	rev/min	mm	
1	2	3	4	5	6		7	8	9		10	11	
ca.68	1400 1800	15,2-17,8 0 - 1	3 -	-		-	ca.16	100 300	18,9-	-	300 500	1,2 2,5-2,7	
ca.62	11,4 4,0	1440-1450 1575-1609					400-470 ③		=008	2,0	1450	8,6	

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil ter		Rotational-speed (2b) limitation intermediate speed	Fuel deli high idle :	very characteristics 5a speed 5b	Starting idle switchin		Torque- travel	control 5
rev/min 1	cm³/1000 strokes .	rev/min 4a 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm³/1000 strokes	rev/min 8	travel mm 9 +0,2
LDA 1400	0,7 bar 76,5-77,5 (74,5-79,5)	1440-1450*	LDA 500 LDA 500	0,7 bar 72,5-74,5 (70,5-76,5) 0 bar 58,0-60,0 (56,0-60,0)	100 100	72,25-82,25 15,8 - 16,2 RW -220(80-240)	1400 1225 1050 500	12,4 12,7

Checking values in brackets

\* 1 mm less control rod travel than col. 2

10.80

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

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#### D. Adjustment Test for Manifold Pressure Compensator

Testatn =

 $500~\text{rev/min} \frac{\text{decreasing}}{\text{in-creasing}}~\text{pressure}$  – in bar gauge pressure

MB 5,7 v 2

-2-

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Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)	
2596 with 1066-1	0,7		13,6 -	13.7
DL		0,35	13,3 -	
		0,225	12,7 -	12,9
		0	12,3 -	12,4

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

## Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,1 p 4 2. Edition

Z. Lui

PES 6 A 95 D 410 LS 2542

ROV 250-1100 AB 956 L

supersedes 10.79

company: M A N engine: D 2566 ME

(177 kW 241 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,50-1,50 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mits 2	Fuel delivery cm <sup>2</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,0+0,1	12,6 - 12,8	0,3(0,6)			
250	5,9-6,1	0,9 - 1,5	0,3(0,5)			
500		C. 4-5				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed		Sliding s	leeve travel
deflection of control	rev/min Control rod travel	Control rod travel	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		0
lever	mm 2	rev/min (28)	lever 4	rev/min 5	mm (4)	lever 7	rev/min	mm (3) 9	rev/min 10	mm '
ca.68	1100 1300	15,2-17,8 0 - 1				ca.10	320-	min.7,5 5,9-6,1 380 =2,0	600	0,4-1,2
ca.48	11,0 40	1140-1150 1180-1210				<b>3a</b>	500	0 - 1	1120	8,3

Torque control travel a = 0 mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-ros Test oil ten		Rotational-speed 20 limitation intermediate speed	Fuel delic high idle s	rery characteristics 5e peed 5b	Starting idle switchir	_	Torque- traval	control 5
rev/min	cm³/1000 strokes	rev/min 40	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>2</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
1100	124, 5- 126, 5 ( 122, 5- 128, 5	1140-1150* )	500	max. 113,5 (max. 115,5)	100	124,0-134,0		
			i		100-	170 (80 <b>-</b> 190)		

Checking values in brackets

1180



<sup>\* 1</sup> mm less control rod travel than col. 2

WPP 001/4 DAF 6,2 e

4. Edition

En

supersedes 8.76

PE 6 A 85 D 320 RS 2466 EP/RSV250-1300 A1B514R,781R (1)250-1200 A1B514R (2)

company: engine:

DAF DF 615 (1) DD 575 (2)

250- 900 A7B566R Testing with "B" leads - cold-start test 781R, see page 3!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing difference between control-rod travel Q and 21 3

ort closing at pres	troke 2,	15+0,1 (RW9)	mm (from BDC			el 9 and 21 3 - 4
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm	Fuel delivery  cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1006	9	4,2 - 4,5	0,4			
200	6 12 9	1,3 - 2,0 7,4 - 8,2 2,4 - 3,1				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

250-1300

Upper	rated speed	}	Intermediate	rated spe	ed	4 Lowe	r rated sp	eed	3 Torque control			
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rey/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel		
1	2	3	4	5	6	7	8	9	10	11		
ca.72	1300	16,0	without auxiliary spring with auxiliary spring			ca.26	250	250 6,0				
	1340 1380	11,2 5,7					100 250	19 ° 21 5,7-6,3	400	0		
<b>⑤</b>	1360 1400 1500	7,0-10,0 2,2- 5,4 0,3- 1					300 440	3,8-4,8	290	1,2-1,8		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-lo	ad stop	Rotational-speed limitat.  3a Fuel delivery characteristics			Starting Idle	fuel delivery	5a idle stop	
Test oil temp. 40°C (104°F) rev/min cm³/1000 strokes 1 2		Note: changed to rav/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm³/1000 strokes 7	rav/min 8	Control rod travei mm 9
1000	54,5-56,5 (53,0-58,0)	1340-1350*			100	max. RW	250	6,0
								./.

Checking values in brackets

\* 1 mm less control rod travel than col. 2

2.77

#### **B. Governor Settings**

Degree of deflection of control lever	r rated speed Control rod travel mm		Intermed	diate rated	speed	Control- lever deflection in degrees 7	- Lower rev/min 8	rated speed   Control rod   travel   mm   9	3 To rev/min 10	rque control   Control rod   travel   mm
ca.72	1300 1340 1380 1360 1400 1500	16,0 11,2 5,7 7,0-10,0 2,2- 5,4 0,3- 1	sprin	auxil		ca.26 y	100 250 300 440	6,0 19 - 21 5,7-6,3 3,8-4,8 0 - 1	400 290	0 1,2-1,8

#### C. Settings for Fuel Injection Pump with Fitted Governor

ISO 4113	1340 11,2 without auxiliarly spring   1360 7,0-10,0   1400 2,2-5,4   1500 0,3-1 with auxiliarly spring    C. Settings for Fuel Injection Pump with spring    Settings for Fuel Injection Pump    Settings for Fuel					100 250 300 440	5	9 - 21 ,7-6,3 ,8-4,8 0 - 1	290	0	
Testoil-ISC	Test oil te	il-load stop emp. 40°C (104°F) cm <sup>3</sup> /1000 strokes 2 Pay attention		rev/min 4 peed a	cm <sup>3</sup> /1000 strokes 5		rev/min 6	cm³/1000 str 7 max. Rk	rokes revi	Control re travel	
		nameplate with	engine DD	<b>675!</b>							

Checking values in brackets

\* 1 mm less control rod travel than col. 2

#### **B. Governor Settings**

250-900

Degree of deflection of control lever	r rated speed Control rod travel mm		Intermediate rated speed			Control- lever deflection in degrees 7				rque control  Control rod  travel  mm
ca.57	900 930 960	16,0 11,6 6,0	without auxiliar spring			ca.24 y	250 100 250	6,0 19 - 21 5,7-6,3	600 370	0 1,2-1,8
<b>2</b>	950 970 1020	5,2-9,6 2,2-6,0 0,3-1,0	with auxiliary spring				300 370	2,4-4,0 0 - 1	370	1,2-1,0

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>2b</b> F	ull-load stop	Note: changed to)		iel delivery paracteristics	Starting f	uel delivery 5	4a) Idle stop	
Test oil t rev/min 1	emp. 40°C (104°F) cm³/1000 strokes 2			cm³/1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
In a	ccordance with	pecial name	plate	on pump!	100	max. RW	250	6,0
		940-950*		•			,	·
								./.

Checking values in brackets

Testing of cold-start device - governor 781R: Pump not driven. Test disengaging force with spring scale at control rod. Test specification  $3.5 \pm 0.3$  kp. With pump being driven at idle speed, position stop screw of holder such that control rod is advanced to 20.5 - 0.5 mm control point when cold-start device is operated. Then increase speed and observe when control rod disengages from start control point. Disengaging speed must be between n = 800 and 1000 min<sup>-1</sup>.

VDT-WPP 001/4 MAN 9,7 p

2. Edition

En

PES 6 A 95 D 410 RS 2128

EP/RSV 250-1100 A1 B 1089 DL

supersedes

company: MAN

engine: D 2156 MTN 5 (256 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

1.95 + 0.1

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery  cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel	Fuel delivery  cm <sup>2</sup> /100 strokes	Spring pre-tensioning (torque-control valve)
1	2	3	4	2	3	6
1000	9	7,5 - 8,0				
	6	3,2 - 4,2				
200	6	0,5 - 1,4				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Degree of deflection of control	rated speed	Control rod travel	Intermediate Degree of deflection of control lever	deffection of control lever rev/min mm			Control rod travel			que control Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 60	1100	16,0	without auxiliary spring with auxiliary spring			ca . 25	250	6,0	1100	0
	1140 1180	12,0 7,0					100	19 -21	400	0,2-0,4
5	1100 1225 1320	ca 12,4 ca 4,0 0,3 - 1,0						5,7-6,3 1,8-3,9 0 - 1		

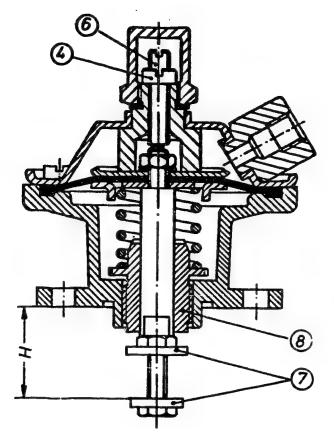
The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-loa	ad stop	6 Rotational- speed limitat.		el delivery rracteristics	Starting Idle	fuel delivery	5a idle stop	
Test oil temp. 40°C (104°F) rev/min cm³/1000 strokes 1 2		Note: changed to rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1100	0,5 bar 127,5 - 129,5	1140-1150*	LDA 800 LDA 5 00	0,5 bar 131,0 - 134,0 0 bar 80,5 - 84,5		15,5 - 16,5	250	6,0
				-				./.

Checking values in brackets

#### EP/RSV with manifold-pressure compensator (LDA)



1. Perform basic adjustment of pump and setting of governor without LDA as described in WPP 001/4 and 1st Supplement.

Set full-load delivery - quantity indication with charge-air pressure - at full-load stop screw of governor.

- Pre-adjust LDA:
   Unscrew upper stop screw (6) until diaphragm makes contact.
   Then pre-tension to 0.5 mm.
   In this position, set dimension H = 22.5 mm at screw with lock nut (7).
- 3. Further settings are to be performed accordingly in line with MPP 001/4 7th Supplement as of Fig. 14:
  - Re Fig. 14 Only fit LDA; stop plate not necessary since testing can be performed with solenoid fitted.
  - Re Fig. 15 Only set delivery at O kp/cm<sup>2</sup> at adjusting nut (4).
  - Re Fig. 16 Adjustment not necessary; fit closure cap.
  - Re Figs. 17 19 Section D (max. pressure = 0.5 bar); adjustment test at
    n = 700 min<sup>-1</sup> decreasing pressure -; adjust in accordance
    with Page 2 at nut (8).
  - Re Figs. 20 24 Accordingly pay attention to 24 V solenoid with Fig. 22!

#### D. Adjustment Test for Manifold Pressure Compensator

MAN 9,7p -2-

Testatn =

700

rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel-
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
2128 with 1089 DL	0,29	0,11	0,2 - 0,3
			1,4 - 1,8
	1		

Notes:

(1) when n =

800

rev/min and gauge pressure = 0.5

bar (= maximum full-load control rod travel)

**estoil-ISO 4113** 

#### **Test Specifications** Fuel Injection Pumps 1 and Governors

VDT-WPP 001/4

1. Edition

PES 8 A 75 D 320 RS 2463

ROV 300-1500 AB 912D (1)

supersedes IHC company:

913D (2) 914D (3)

DV 550C

engine:

Inlet pressure 2,5 bar (1) See note 1,2,3 -page 3!

(1 - 180 PS)\* (2 - 160 PS)\* (3 - 200 PS)\*

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strakes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1500	9,7	5,6 - 6,2	0,3			
1000	(± 0,05)	4,8 - 5,5 0,1 - 1,4 -	-(Cyl. 1	- 4 - 6	- 7 )	
300	ca.6,3	3,5 - 4,1 -		- 3 - 5		

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

RQV .. 912 D (1)\*

	rev/min	Control rod (a	Degree of   Control rod   D		Lower rated speed  Degree of deflection Control rod travel			Sliding sleeve travel		
	rod travel		of control	rev/min 5	mm (4)	of control lever 7	rev/min 8	mm 3	rev/min 10	mm 11
ca.68	1600 2000	15,0-18,2	-	-	-	ca.10	250 400	0,5-8,2	1600	8,3
ca.65	1500 1600	15,0-17,6 10,0-14,0	Î				500 650	2,3-3,3	1500	0
	1700 1940	4,6-10,4 0				(3a)	860	0	700	0,3-0,4

Torque controi travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-roo Test oil ten		Rotational-speed 2b limitation intermediate speed	Fuel deliv	rery characteristics (5a) peed (5b)	Starting Idle switchir	0	Torque- travel	Control rod
rev/min	cm³/1000 strokes .	rev/min 48	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
1 _	2	3	4	5	6	7	8	9
1500	59,0-60,0	1600-1610* 1650: 7-8mm RW Ch	1000 ange-c 150-2 (130-	ver point 80 U/min	100 300 100 300	111,5-134,5 <sub>)</sub> 17,5- 18,5 0 0		2-3-5-8 1-4-6-7

Checking values in brackets

B. Gove	ernor	Setting	gs			RQV9	13 I	D RQV.	.913	D (2)* IH	C-Ppe2	2463
Upper rated s	peed			Intermediate	rated spe	ed /	Lo	wer rated	speed		Sliding sleeve trave	
Degree of deflection of control	rev/mm Controll rodtravel	Control rod travel	(la)	Degree of deflection of control		Control rod travel	de	gree of flection control	1	Control rod travel		1
lever	mm	rev/min	(2a)	lever	rev/min	mm (	lev		rev/min	mm ③	rev/min	mm
1	2	3		4	5	6	7		8	9	10	11
ca.68	1600 2000	15,0-18 0	3,2	-	-	-	C	a.10	250 400	6,5-8,2 2,9-4,5	1600	8,3
ca.65	1500	15,0-17		İ					500	2,3-3,3	1500	.0
	1600	10,0-14			1				650	1,1-2,1	700	
	1700	4,6-10	),4		l	İ			860	0		0,65
	1940	0					(3	•				

Torque control travel a =

**B.** Governor Settings

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil tem	stop	Rotational-speed (2b) timitation intermediate speed	Fuel deliv high idle s	rery characteristics 5a speed 5b	Starting Idle switchir		Torque- travel	Control rod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 48	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm3/1000 strokes	rev/min 8	travel mm 9
1500	50,0-51,0 (9,35mmRW)	1600-1610* 1650: 7-8mm RW C		47,0-49,0 over point 30 U/min 250)	100 300 100 300	111,5-134,5) 17,5- 18,5) 0 0		2-3-5-8 1-4-6-7

Checking values in brackets

\* 1 mm less control rod travel than col 2

#### **B.** Governor Settings

RQV..914D (3)\*

Upper rated s	peed			Intermediate	rated spe	ed	Lower rate	d speed		Studing st	eeve travel
		Control rod	(1a)	Degree of deflection	I	Control rod travel	Degree of deflection	1	Control rod travel		1
of control lever	rod travel	rev/min	(2a)	of control lever	rev/min	mm (4	of control lever	rev/min	mm ③	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.68	2000 1500 1600	15,0-18 0 15,0-17 10,0-14	,6	-	-	-	ca.10	250 400 500 650	6,5-8,2 2,9-4,5 2,3-3,3 1,1-2,1	1600	8,3
	1700 1940	4,6-10 0	,4				(3a)	860	U		

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-roi Test oil ten		Rotational-speed (2b) Ilmitation intermediate speed	Fuel deliv high idle s	very characteristics 5a speed 5b	Starting Idle switchin	fuel delivery 6	Torque- travel	Control cod
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm³/1000 strokes 7	rev/min 8	travel mm
1500	67,0-68,0 (10,7mmRW)	1600-1610* 1650: 7-8mmRW Cha		er point 30 U/min 50)	100 300 100 300	111,5-134,5) 17,5- 18,5) 0 0		-3-5-8 -4-6-7

Checking values in brackets

- (1) Supply pressure 2.5 bar
- (2) Barrel 1: Start of dely. at CRT 10.7 = 1.95 + 0.05 mm cyl. 1-7-6-4 (90° each) Barrel 2: Port opening at CRT 10.7 = 3.95 + 0.05 mm cyl. 2-8-3-5 (90° each)
- (3) In start-of-delivery position of barrel 1 at CRT 10.7 mm, use setting device to position jaws of coupling horizontally and tighten screws to 25 30 N !

#### **Test Specifications** Fuel Injection Pumps (A) and Governors

WPP 001/4 KHD 6,1 a

2. Edition

PES 6 A 85 D 410/3 RS 2366

EP/RSV 325-1400 A8B674D, 707D 325-1150 A8B674D, 707D

supersedes company

5.74 KHD

RS 2415

engine

EP/RS 325/1325 AOB691D, 709D

BF 6 L 913

Festoil-ISO 4113

RS 2532

See page 3 - 4! RS 2532
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

1,9 + 0,1

mm (from BDC)

Rotational speed rav/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strakes 4	Control rod travel mm 2	Fuel delivery cm <sup>9</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,1 - 4,5	0 ,4	4		
	6	0,6 - 1,4				
200	9	1,4 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

EP/RSV 325-1400 A8B674D, 707D

	rated speed Control rod travel mm		Intermed	liate rated	speed	Control- lever deflection in degrees 7		rated speed  Control rod travel mm	9	rque control Control rod travel mm
ca.69	1400 1450 1500	16,0 10,5 4,0	witho sprin	ut aux	xil iar	ca.20 y	325 200	5,5 19 - 21	1400	0
ca.68	1400 1510 1600	ca.10,0 ca. 4,0 0,3-1,5	with sprin	auxil <sup>i</sup> g	iary		325 500 650	5,2-5,8 1,2-3,3 0 -1,5	500	1,2-1,4

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	6 Rotational- speed limitat	3 Fu	iel delivery paracteristics	Starting f	uel delivery 5			
Test oil to rev/min 1	emp. 40°C (104°F) cm³/1000 strokes 2	Note. changed to .) rev/min 3	rev/min	cm <sup>9</sup> /1000 strokes 5	rev/min	cm <sup>2</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
LDA	0,7 bar		LDA	0,7 bar					
***		***	*** LDA 500	0 bar 43,5-47,5	100	119,5-129,5	325	5,5**	
(inr	ase by ± 1,0 cm	<sup>3</sup> !)						./.	

Checking values in brackets

\* 7 mm less control rod travel than col. 2

11.77



#### **B. Governor Settings**

	r rated speed Control rod travel mrs			liate rated	speed	Control- lever deflection in degrees 7	- Lower rev/min 8	rated speed Control rod travel mm		rque control Control rod travel mm
ca.56	1150 1200 1250	16,0 11,1 5,4	withou spring		iliar	ca.21	325 200 325	5,5 19 - 21 5,5-5,8	1130	0
20	1220 1300 1380	7,5-10,4 1,3-3,6 0,3-1,5	with a		ary		500 660	1,4-3,4 0 -1,5	500	1,0-1,2

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop emp. 40°C (104°F)	Rotational- speed limital.		nel delivery eracteristics	Starting f	ruel delivery 5	(4a) idi	e stop Control rod	
i	cm <sup>3</sup> /1000 strokes	changed to.) rev/min 3	r <del>ov</del> /min 4	cm <sup>3</sup> /1000 strokes .5	rev/min 6	cm³/1000 strokes 7	rev/min 8	travel mm 9	
LDA *** See	0,7 bar age 3 - 4!	<b>治水水</b>	LDA *** LDA 500	0,7 bar 0 bar 43,5-47,5	100	119,5-129,	325	5,5**	

Checking values in brackets

Testoil-ISO 4113

\* 1 mm less control rod travel than col. 2

#### **B. Governor Settings**

#### EP/RS 325/1325 AOB691D, 709 D

	r rated speed Control rod travel mm	rev/min Control rod travel mm rev/min 3	Intermed	diate rated	speed 6	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed  Control rod travel  mm  9	1 4	rque control  Control rod  travel  mm
VH ca. 70 FH max.	1325 1400 1480 1550 1620	15,8-16,4 12,1-13,1 7,4- 8,8 2,8-4,8 0		-	-		325	8,3 9,0-9,8 6,0-6,8 3,5-4,0 3,3-3,9 2,4-3,0	1300 1000 600 <sup>/</sup>	0 0,8-1,0 1,2-1,4

#### C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Fu	ill-load stop	6 Rotational- speed limitar.		el delivery eracteristics	Starting f	uel delivery 5	(4a) Idio	stop
Test oil to rev/min 1	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min	cm³/1000 strokes 5	rev/min	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA	0,7 bar		LDA	0,7 bar	100	119,5-129,5		
***		***	*** 500	43,5 ~ 47,5				
								./.

Checking values in brackets En

#### D. Adjustment Test for Manifold Pressure Compensator

KHD 6,1 a

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
all governors	0,38;	0,10	0,2 - 0,3 1,6 - 2,0
	<b>3</b>		

Notes:

Festoil-ISO 4113

(1) when n =

rev/min and gauge pressure =

bar ( = maximum full-load control rod travel)

#### NOTES:

- 1. \*\* Single-lever operation in the case of Liebherr excavators; therefore use shorter screw 1 423 400 031 and set it to 0.3 1.0 before stop.
- 2. Test EP/RS governor in accordance with MPP 001/4 KHD 1 c.
- 3. Perform LDA (manifold-pressure compensator) adjustment in accordance with W 420/305.
- 4. Dimension H = 22.5 mm basic setting of LDA.

### C. Settings for Fuel Injection Pump with Fitted Governor

1			1		1			
engine po Full-load of Control-ro Test oil ter	elivery	Rotational-speed limitation	Fuel deliv	very characteristics	Starting Idle switchin	fuel delivery	Intermedi rotational Torque-C travel	speed
rev/min	cm <sup>3</sup> 1000 strokes	rev/min	rev/min	cm <sup>\$</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes		mm .
1	2	3	4	5	6	7	8	
BF 6 L	913 - PES 6	A DRS2366,	2415	-F- or B-po	wer o	utput / re	v/min	
1400	88,0-90,0	1420	800	80,0-83,0	160	PS / n = 28	00	
1400	84,0-86,0	1420	800	66,0-69,0	142			
1325	87,5-89,5	1340	800	82,5-85,5	160			
1325	82,5-84,5	1340	800	66,0-69,0	140			
1250	87,0-89,0	1270	800	84,5-87,5	160			
1250	83,0-85,0	1270	800	76,0-79,0	148	PS / n = 25	00	
1250	81,0-83,0	1270	800	69,5-72,5	140			
1200	86,0-88,0	1220	800	84,5-87,5	156			
1200	78,0-80,0	1220	800	68,0-71,0	135			
1165	84,0-86,0	1180	800	84,5-87,5	152			
1150	83,5-85,5	1165	800	84,5-87,5	152	PS / n = 23	ሰበ	
1150	80,0-82,0	1165	800	72,0-74,0	142			
1100	82,0-84,0	1115	800	84,5-87,5	147	_ ,		
1075	82,0-84,0	1090	800	84,5-87,5	144			
1075	78,0-80,0	1090	800	76,0-79,0	136			
1050	76,5-78,5	1065	800	73,5-76,5	130 1	PS / n = 21	በበ	
1000	82,5-84,5	1015	800	84,5-87,5		PS / n = 20		
1000	77,0-79,0	1015	800	72,0-75,0	130			
900	82,0-84,0	910	800	84,5-87,5	125		-	
875	68,0-70,0	885	800	66,0-69,0	106		-	
750	85,0-87,0	760	-	· •	105 1	PS / n = 15	በበ	
750	78,0-80,0	760	-	-	100			

# Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps ① and Governors

1 / A

WPP 001/4 2. Edition

En

PE 12 A 90 D 521 RS 2431 RQV325-1500 AB876 F,G,H,I,J, ./. 1 - 4 - 9 - 8 - 5 - 2 - 11 - 10 - 3 - 6 - 7 - 12 0 - 15-60-75-120-135-180-195-240-255-300-315° Testing with "B" leads

supersedes

9.75

company:

Baudouin

engine:

DF 12

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

(2,15-2,25) mm (from BDC)

Rotational speed ray/min	Control rod travel mm	(2,10-2,30) Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	3	3,1 - 3,5	0,4			
	6 12	0,5 - 1,2 5,6 - 7,4				
200	9	0,7 - 1,5				

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

RQV .. 876

deflection of control	ev/min Control rod travel	mm (IEVe)	9	Intermediate Degree of deflection of control lever	rated spi rev/min 5	Control rod travel mm 4	Lower rated Degree of deflection of control lever	speed rev/min 8	Control rod travel	Sliding si rev/min 10	mm
1	1510 1580 1700 1800	15,0-18, 9,3-14, 0 - 7			-	-	ca.12	200 400 600 920	7,2-8,2 2,6-4,5 1,6-3,3	1510	8,3

Torque control travel a =

шm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		l-rod stop temp. 40°C (104°F) 2 intermediate speed		very characteristics 5a	Starting Idle switchir		Torque- travei	Control cod	
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm	
1	2	3	4	5	6	7	8	9	
1300	54,5-56,5	1540-1550*				-			
					325	8,25-14,25			
						ge-over poin -275 min-1			

Checking values in brackets

### 0

# Testoil-ISO 4113

#### C. Settings for Fuel Injection Pump with Fitted Governor

Control-rod stop Test oil temp 40°C (104°F)	speed Fuel deli	very characteristics	Starting in Idle switching	uel delivery g point	Intermediate rotational speed Torque-control	
rev/min cm <sup>3</sup> /1000 strokes rev/min	rev/min	cm <sup>9</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes	travel rev/min 8	mm

F
1300 53,0 - 55,0 1540-1550\*

G
1300 57,5 - 59,5 1540-1550\*

H
1300 64,5 - 66,5 1540-1550\*

I
1300 71,5 - 73,5 1540-1550\*

97,5 - 99,5 1540-1550\*

1300

Testoil-ISO 4113

#### **Test Specifications Fuel Injection Pumps** and Governors

WPP 001/4 MWM 6,2 c 3. Edition

PES 6 A 90 D 320/3 RS2393

EP/RSV 300-1000 A7 B529DR

supersedes 4.75

RS2464

325-1500 A2

company: MWM engine:

As from FD 821 the idle auxiliary-spring has been changed from 1 424 641 000 to ... 001. New values enclosed.

TD 226-6

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,15 + 0,1

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,1 - 5,5	0,4			
	6	1,6 - 2,6				
200	9	1,9 - 2,9				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

RSV 300-1000

Upper Degree of deflection of control lever	rated speed rev/min	Control rod travel mm	Intermediate Degree of deflection of control lever		control rod travel mm	4 Lower Degree of deflection of control lever	rev/min	ed Control rod travel mm	3 Tor	que control Control rod travel mm
ca.68	1000 1050 1100	16,0 8,5 2,4	without auxiliary spri			ca.28 ng	300 100 300	5,5 19 - 21 5,7-6,3		
©a.67	1030 1070 1120	8,0-9,0 2,0-4,0 0,3-1,0	with au	xilia	ry spring		450	0 - 1		

The numbers denote the sequence of the tests

#### C. Settings for Fue! Injection Pump with Fitted Governor

2 Full-load stop		6 Rotational- speed limitat.				fuel delivery	5a Idle stop	
Test oil temp. 40°C (104°F) rev/min cm³/1000 strokes 1 2		Note: changed to rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min 8	Control rod travel mm
See pa	age 3 - 4!							

Checking values in brackets

\* 1 mm less control rod travel than col. 2

5.79

#### **B. Governor Settings**

Degree of deflection of control lever	r rated speed Control rod travel mm		intermed	liate rated	speed	Control- lever deflection in degrees 7	Lower	rated speed  Control rod travel mm	11 9 1	rque control  Control rod travel mm
ca.58	1500 1580 1630	16,0 9,0 4,2	witho sprin	out aux	ciliar	ca.20 y	325 100 325	5,5 19 - 21 5,7-6,3	-	-
ca.56	1530 1580 1620	8,0-9,0 3,0-4,0 0,3-1,0	with sprin	aux il i	iary		420 520	1,4-3,4		

## C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	6 Rotational- speed limitat.	39 FL	nel delivery naracteristics	Starting f	fuel delivery 5			
rev/min	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min	cm <sup>3</sup> /1 <b>000</b> strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min	Control rod travel mm	
See p	age 3 - 4!							·	
							:		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

#### **B. Governor Settings**

Degree of deflection of control lever	er rated speed Control rod travel mm		interme	diate rated	speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed  Control rod  travel  mm  9	3 To	rque control  Control rod  travel  mm  11
		·								
29								_		

#### C. Settings for Fuel Injection Pump with Fitted Governor

	li-load stop	Spood intinual.		el delivery aracteristics	Starting f	uel delivery 5	(4a) Idio	stop
rev/min	cmp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
		:						·

Checking values in brackets

\* 1 mm less control rod travel than col. 2

engine po Full-load di Control-roo Test oil terr	stivery	Rotational-speed limitation	Fuel deln	very characteristics	Starting Idle switchir	fuel delivery	Intermed rotations	al speed
rëv/min 1	cm <sup>2</sup> 71000 strokes 2	rev/min	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/mın 6	cm <sup>3</sup> /1000 strokes 7	travel rev/min B	mm
F150 1250	PS / 2500 87,0-89,0	min-1 1270	800	84,0-87,0			•	,,
B143 1250	PS / 2500 84,0-86,0	min-1 1270	800	79,5-82,5				
F148 1200	PS / 2400 86,0-88,0	min <sup>-1</sup> 1220	800	84,0-87,0				
B141 1200	PS / 2400 82,0-84,0	min <sup>-1</sup> 1220	800	79,5-82,5				
F146 1150	PS / 2300 84,0-86,0	min-1 1170	800	84,0-87,0				
B139 .1150	PS / 2300 81,0-83,0	min <sup>-1</sup> 1170	800	79,5-82,5				
A125 1140	PS / 2300 80,0-83,0	min-1	1150	74,0-76,0				
F143 1100	PS / 2200 84,0-86,0	min <sup>-1</sup> 1120	800	84,0-87,0				,
B137 1100	PS / 2200 81,0-83,0	min <sup>-1</sup> 1120	800	79,5-82,5				
A134 1090	PS / 2200 80,5-83,5	min <sup>-1</sup>	1100	74,0-76,0				
F 140 1050	PS / 2100 85,0-87,0	min-1 1070	800	84,0-87,0				
B134 1050	PS / 2100 82,0-84,0	min-1 1070	800	79,5-82,5				
A122 1040	PS / 2100 80,5-83,5	min <sup>-1</sup>	1050	76,0-78,0				
F135 1000	PS / 2000 86,0-88,0	min-1 1020	800	84,0-87,0				
B130 1000	PS / 2000 81,0-83,0	min <sup>-1</sup> 1020	800	79,5-82,5				
A119 990	PS / 2000 80,5-83,5	min-1	1000	73,0-75,0				
B123 900	PS / 1800 82,0-84,0	min-1 910	750	78,5-81,5				
A112 890	PS / 1800 89,5-92,5	min-1	900	75,0-77,0				٠.
B110 750	PS / 1500 86,0-88,0	min <sup>-1</sup> 760	650	74,0-77,0		-,	\ 100 P	'S see page

A 100 BHP at 1500 min/1

740 87.5 - 90.5 ----- 750 86.0 - 88.0

The nameplate described on  $\underline{\text{MWM 1.5 a}}$  has recently been expanded - in columns n = rotational speed and Q =  $\underline{\text{full-lod}}$  fuel delivery - to include two rotational speeds and two fuel deliveries, to enable more exact adjustment in the case of regulators with torque control.

Accordingly - in deviation from VDT-WPP 001/4, 1st addendum, Adjustment of the Regulator and the Pump - the following points will apply:

- (1) Adjustment of the control spring: remains.
- (2) Adjustment of the full-load fuel delivery: in accordance with nameplate, n = (1st rotational speed) and Q = (1st fuel delivery), or according to Sect. C, Columns 1-2.
- (3) Adjustment of the torque control: is adjusted until the control-rod travel is changed as indicated in (2), or according to the new nameplate, until the 2nd fuel delivery is obtained at the 2nd rotational speed; or accordance with Section C, Columns 4-5.
- (6) Start of speed regulation: is readjusted according to the nameplate n = (1st rotational speed + 20 min/1) or Column 3. However, for A-power output: readjust until the fuel delivery as shown in Columns 4-5 has been attained.

New pumps from the warehouse in Stuttgart do not have the spring retainer! For that reason, use the old spring retainers, or order new ones from MWM in accordance with the old nameplate!

**Festoil-ISO 411** 

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 MB 3.8 q

3. Edition

PES 4 A 90 D 410 RS2294 RQV 300-1425 AB740,768 (1) RS2294 RQV 300-1425 AB780,781 (2) RS2294 RQV 300-1400 AB836,884 (3-4)

supersedes

12.74 Daimler-Benz

company: engine:

OM 314 (85 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,15+0,1

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,5 5,0	0,4			
200	6 12 9	1,8 - 2,6 7,3 - 8,2 2,0 - 2,8				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

RQV..740,768 (1)

Upper rated	speed			Intermediate	rated sp	eed	Lower rated	speed		Sliding s	leeve travel
Degree of deflection of control	rev/min Control rod travel		(19)	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		1
lever 1	mm 2	rev/min 3	(28)	lever 4	rev/min 5	mm (4) 6	lever 7	rev/min 8	mm (3) 9	rev/min 10	mm 11
ca.66	1425 1500 1550	16,0-19 11,6-16 8,2-13	,0 ,4				ca.10	100 300 450	6,6-7,8 4,9-6,4 3,0-4,2	1425	1,4-2,2 8,1
	1650 1790	1,4-8   0	,0					600 760	1,3-2,8 0	-	-
							<b>3</b>				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil ten rev/min		Rotational-speed ②D limitation intermediate speed rev/min	(30)		idle switchir	$\mathbf{O}$	Torque- travel	Control 5  Control rod travel
1	2	3	4	5	6	7	8	9
(1) 1400	63,0-65,0	1460-1470*			100			age 4
(inrea	ise by ± 1,5 d	m³!)				e-over point 250 min-1		./.

Checking values in brackets

\* 1 mm less control rod travel than col. 2

#### **B.** Governor Settings

RQV..780, 781 (2)

Upper rated s	speed			Intermediate	rated spe	ed	Lower rated	speed		Sliding sl	eeve travel
Degree of deflection of control lever	Control rodtravel	Control rod travel mm rev/min	$\sim$	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.68		0 - 7	,3 ,0				ca.10	200 300 450 600 770	6,0-7,4 4,9-6,6 3,0-3,9 1,4-2,8		1,2-2,2
							(3a)				

Torque control travel a =

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roe Test oil ten	stop '	Rotational-speed (2b) Ilmitation intermediate speed	Fuel deliv high id <del>l</del> e s	peed 5b	Starting Idle switchin		Torque- travel	Control rod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
(2) 1400	63,0-65,0	1460-1470*			100	72,25-82,25	700 1300	/ 780 / 781
		4		CI	, -	over point 250 min-1		

Checking values in brackets

\* 1 mm less control rod travel than col 2

### **B.** Governor Settings

RQV..836 (3)

Upper rated s	peed			Intermediate	rated spe	ed	Lower rated	speed		Slidina sl	eeve travel
	rev/min Control	liave, \	(a)	Degree of deflection	1	Control rod travel	Degree of deflection	Ì	Control rod travel	1	①
of control lever	rod travei mm	mm rev/min (	2a)	of control lever	rev/min	mm 4	oi control lever	rev/min	mm ③	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.68	1440 1780	15,0-18 0					ca.12	150 250	7,2-8,2 6,2-7,4	400 1440	1,4-2,0 8,3
ca.67	1400 1500 1600	15,0-17 8,4-13 1,5-8	,4					400 600 760	3,7-5,1 1,5-2,8 0	•	-
	1760	0					<b>3</b> a				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil tem		intermediate speed	Fuel deliv	very characteristics 5a speed 5b	Starting Idle switchin		Torque- travel	Control roo
rev/min	cm <sup>3</sup> /1000 strokes	rev/min (4a)	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
(3) 1400	63,0-65,0	1460-1470*			100	72,25-82,25	1300	
						e-over point 250 min <sup>-1</sup>		./.

Checking values in brackets

\* 1 mm less control rod travel than coi. 2

①

#### **B.** Governor Settings

deflection of control	rev/min Control rodtravel	Control rod travel mm rev/min		Intermediate Degree of deflection of control lever	rev/min	Control rod travel	Lower rated Degree of deflection of control lever	speed rev/min 8	Control rod travel	Sliding sl rev/min	eeve travel  1  mm  11
ca,66	1440 1550 1680 1820	15,0-1 8,4-1 0 - 0	7,6 2,8 6,6	-	-	-	ca.15	200 300 450 600 770	6,4-7,8 5,3-6,6 3,0-4,6 1,6-2,8	400 1440	1,4-2,0

Torque control travel a =

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil tem	SIOD	Rotational-speed (2b) limitation intermediate speed	Fuel deliv high idle s	peed 5b	Starting tidle switching		Torque- travel	Control rod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 48	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm3/1000 strokes 7	rev/min 8	travel mm 9
(4) 1400	63,0-65,0	1460-1470*			100	72,25-82,25		
					180-2	250		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

## **B.** Governor Settings

Upper rated s	speed			Intermediate	rated spe	ed	Lower rated	speed		Sliding s	leeve travel
	rev/min Control rod travel	Control rod travel	(la)	Degree of deffection of control		Control rod travel	Degree of deflection of control	1	Control rod travel		1
lever		rev/min 3	(2a)	lever 4	rev/min 5	mm (4) 6	lever	rev/min 8	mm (3)	rev/min 10	mm 11
									i		
							(3a)				

Torque control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil tem	elivery I stop pp. 40°C (104°F) 2	intermediate speed	Fuel deliv high idle s	rery characteristics 5a peed 5b	Starting Idle switchin		Torque- travel	Control rod
rev/min	cm³/1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	travel mm 9
	•							
						1		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

MB 3.8 g

#### Setting of air-operated intermediate-speed stop (768):

Start of adjustment

0.2 bar

End of adjustment

3.0 bar

n = 650 min<sup>-1</sup> - approx. CRT 5 = 16.25-18.25 cm<sup>3</sup>/1000 strokes at 3.0 bar (adjust with adjusting screw at lever shaft).

Testoil-ISO 4113

C10

Testoil-ISO 4113

## Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MWM 1,5 b 3. Edition

En

PES 2 A 75 <sup>C</sup> <sub>D</sub> 320 RS1164, 1244 EP/RSVA2B398DR 3 RS1165, 1245 EP/RSVA7B407DR 4 RS1166, 1246A7B505DR 6 RS1167 EP/RSVA2B407DR -320/3A2B505DR Instructions P. 3 All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers	supersedes 4.68 company. MWM engine: D 208 - 2 4 D 308 6
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#### **A. Fuel Injection Pump Settings**

Port closing at prestroke

2,45 + 0,1

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1000	12	6,2 - 6,6	0,4			
200	9 9	3,2 - 3,7 1,9 - 2,8				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

300-1300 A2B398DR

Upper Degree of deflection of control lever	rated speed rev/min 2	Control rod travel mm 3	Intermediate Degree of deflection of control lever	rated spe rev/min 5	Control rod travel mm	Lower Degree of deflection of control lever	rev/min	Control rod travel mm	3 To	cque control Control rod travel mm
ca.49	1300 1350 1400	16,0 11,7 6,7	without spring	t auxi	liary	ca.18	300 100	6		
<b>5</b>	1380 1480 1600	7,4-9,8 * 1,8-4,1 0,3- 1	with au spring	xilia:	ry		300 500 700	5,7-6,3 1,5-3,6 0 - 1	See n	bte

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-loa	ad stop	6 Rotational- speed limitat.		el delivery aracteristics	Starting Idle	fuel delivery	Sa) Idi	e stop
	. 40°C (104°F) cm <sup>3</sup> /1000 strokes 2	Note: changed to rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm³/1000 strokes	rev/min 8	Control rod travel mm
See pa	ge 4			·				
								./.

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.77

Upper rated s	effection travel			Intermediate rated speed			Lower rated speed			eeve travel
Degree of deflection of control			Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		ontroi travei
lever	rev/min	mm	lever	rev/min	mm	tever	rev/min	mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11

#### 300-1500 A2B398DR

#### 300-900 A7B407DR

#### 300-1000 A7B407DR, 505DR

ca.68	1000 16,0		ca.28 300	6,0
	1040 10,8 1070 6,0	*	100 300	19 - 21
	1050 7,4-10,6		400	5,7-6,3 *** 3,0-4,4
	1100 3,0- 5,0 1200 0.3- 1	) **	580	0 - 1

#### 325-1500 A2B407DR, 505DR

ca.58		16,0		ca.20 325	6,0	
	1550 1600	11,6 7,0	*	*	19 - 21 5,7-6,3	***
	1650	7,5-10,0 3,1-5,3 0,3-1	**	500	2,0-3,9 0 - 1	

- \* without auxiliary spring
- \*\* with auxiliary spring
- \*\*\* See note

Testoil-ISO 41

#### C. Settings for Fuel Injection Pump with Fitted Governor

engine per Full-load of Control-ro Test oil te	delivery	Rotational-speed limitation	Fuel delin	very characteristics	Idle	fuel delivery ng point I	Intermed rotations Torque- travel	i speed
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	ļ
32 PS	/ 2100 min-1	D 208 - 3 -	Farme	r 2 D -	•	•		•
1050	39,0-40,0	1070	700	44,0-46,0				
32 PS	/ 1950 min-1	- D 308 - 3 -	231 G	Τ -				
975	39,0-40,0	990	700	44,0-46,0				
38 PS	/ 2600 min-1	- D 208 - 3 -	Farme	r 2 -				
1300	41,0-42,0	1320	700	41,0-43,0				
45 PS	/ 2075 min <sup>-1</sup>	- D 208 - 4 -	Farme	er 3 S -				
1030	41,0-42,0	1050	700	46,0-48,0				
55 PS	/ 2300 min <sup>-1</sup>	- D 208 - 4 -	Favor	it 3 -				
1150	45,0-46,0	1170	700	47,0-49,0				
55 PS	/ 2400 min <sup>-1</sup>	- D 208 - 4 -	Farme	er 4 S				
1150	46,0-47,0	1200	700	48,0-50,0				
80 PS	/ 2300 min-1	- D 208 - 6 -	Favor	rit 4 -	<del></del>			<del></del>
1150	44.0-45.0	1170	700	47,0-49,0				

#### Notes:

The nameplate described on  $\underline{\text{MWM 1.5 a}}$  has recently been extended in column n = (engine speed) and Q = (delivery) to include 2 engine speeds and 2 injected-fuel quantities, so as to be able to effect more precise adjustment in the case of governors with torque control.

As opposed to WPP 001/4, adjustment of governor (torque control) and full-load delivery with fuel-delivery characteristics, the following items apply:

- (2) Adjustment in accordance with nameplate n = (1st engine speed) and Q = (1st injected-fuel quantity); or in accordance with columns 1 and 2\*.
- (3) Is adjusted until there is a change in control-rod travel as read off under (2) or (with new nameplate) until 2nd injected-fuel quantity is reached at 2nd engine speed; or in accordance with columns 4 and 5\*.
- (6) Is adjusted in accordance with nameplate  $n = (1st engine speed + 20 min^{-1})$ ; or column 3\*
- \* The full-load data arranged according to engine types apply in line with the above note to repairs performed on Fendt tractor vehicles on which the new nameplate (with 2 engine speeds and injected-fuel quantities) has not yet been introduced.

Checking values in brackets

\* 1 mm less control rod travel than col 2

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#### C. Settings for Fuel Injection Pump with Fitted Governor

rev/min cm <sup>3</sup> /1000 strokes rev/min rev/min cm <sup>3</sup> /1000 strokes rev/min cm <sup>3</sup> /1000 strokes rev/min tmi	engine po Full-load de Control-rod Test oil ten	elivery	Rotational-speed limitation	Fuel deln	very characteristics	Starting Idle switching	fuel delivery	Intermed rotationa Torque- travel	speed
	rev/min	cm <sup>9</sup> 1000 strakes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes		mm
	1	2	3	4	5	6	7	8	ļ

F 31 PS / 3000 min<sup>-1</sup>

1500 47,0-49,0 1520

B 30 PS / 3000 min-1

1500 45,0-47,0 1520

A 28 PS / 3000 min-1

1500 47,0-49,0 1520

F 30 PS / 2800 min<sup>-1</sup>

1400 47,5 - 49,5 1420

B 29 PS / 2800 min-1

1400 46,0-48,0 1420

A 27 PS / 2800 min-1

1400 47,5-49,5 1420

F 29 PS / 2600 min-1

1300 49,0-51,0 1320

B 28 PS / 2600 min-1

1300 47,5-49,5 1320

A 26 PS / 2600 min-1

1300 49,0-51,0 1320

F 28 PS / 2500 min-1

1250 48,5-50,5 1270

B 27 PS / 2500 min-1

1250 46,5-48,5 1270

A 25 PS / 2500 min<sup>-1</sup>

1250 48,0-50,0 1270

0

## C. Settings for Fuel Injection Pump with Fitted Governor

engine po Full-toad d Control-ro Test oil ter	elivery	Rotational-speed limitation	Fuel deln	very characteristics	Idle	fuel delivery	intermed rotations Torque- travel	al speed
rev/min	cm <sup>2</sup> 71000 strokes	rey/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	ļ
F 27 P	S / 2400 min-	<u> </u>	•					
1200	47,5-49,5	1220						
B 26 P	S / 2400 min-	1						
1200	46,0-48,0	1220						
A 24 P	S / 2400 min-	_						
1200	47,0-49,0	1220						
F 26 P	S / 2300 min-	1						
1150	46,5-48,5	1170						
B 25 P	S / 2300 min	1						
1150	44,5-46,5	1170						
A 23 P	S / 2300 min-	1						
1150	45,5-47,5	1170						
F 25 P	S / 2200 min-	1						
1100	44,0-46,0	1120						
B 24 P	S / 2200 min-	1						
1100	42,0-44,0	1120						
A 22 F	S / 2200 min-	1		<del></del>		<del> </del>		
1100	43,5-45,5	1120						•
F 24 F	S / 2100 min-	1						
1050	43,5-45,5	1060						
B 23 F	S / 2100 min-	1						
1050	41,0-43,0	1060						
A 21 F	PS / 2100 min-	1						
1050	42,0-44,0	1060						

-6-

### C. Settings for Fuel Injection Pump with Fitted Governor

			<u> </u>			1	
engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)	Rotational-speed limitation	Fuel deli	very characteristics	Idle	fuel delivery ng point	Intermed rotationa Torque- travel	speed
rev/min cm <sup>2</sup> /1000 strokes	rev/miñ	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	l ww
1 2	3	4	5	6	7	8	
F 23 PS / 2000 min <sup>-1</sup>	<b>,</b>	1	•	•	•		
1000 42,5-44,5	- 1060		-				
1000 42,5-44,5	1000						
B 22 PS / 2000 min-							
1000 40,0-42,0	1060						
A 20 PS / 2000 min-	1						
1000 41,0-43,0	1060						
		<del></del>					
B 20 / 1800 min <sup>-1</sup>							
900 41,0-43,0	910						
A 18 PS / 1800 min <sup>-</sup>	-						
900 41,0-43,0	910						
B 16 PS / 1500 min-	1						
750 39,5-41,5	760						
	1						
A 15 PS / 1500 min <sup>-</sup>	Produ						
750 41,0-43,0	760						

①

### C. Settings for Fuel Injection Pump with Fitted Governor

engine po Full-load ( Control-ro Test oil te	delivery	Rotational-speed limitation	Fuel deli	very characteristics	Starting Idle switchir	fuel delivery	Intermed rotationa Torque- travel	speed
rev/min	cm <sup>2</sup> /1000 strokes	rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	mm
F 46,	5 PS / 3000 mi	n-1	1					<b>1</b>
1500	46,5-48,5	1520						
B 45 I	PS / 3000 min <sup>-</sup>	1			<del></del>		<del></del>	
1500	45,0-47,0	1520						
A 42	PS / 3000 min <sup>-</sup>	1						
1500	46,0-48,0	1520						
F 45	PS / 2800 min <sup>-</sup>	1						
1400	46,5-48,5	1420						
B 43,	5 / 2800 min <sup>-1</sup>		<del> </del>		· · · · · · · · · · · · · · · · · · ·			
1400	45,0-47,0	1420						
A 40,	5 PS / 2800 mi	<sub>n</sub> -1						
1400	45,5-47,5	1420						
F 43,	5 / 2600 min <sup>-1</sup>						<del></del>	
1300	47,5-49,5	1320						
B 42	PS / 2600 min <sup>-</sup>	1						
1300	45,5-47,5	1320						
A 39	PS / 2600 min <sup>-</sup>	1						
1300	47,0-49,0	1320				,		
F 42	PS / 2500 min <sup>-</sup>	1	<del></del>		<del></del>			
1250	46,5-48,5	1270						
B 40,	5 PS / 2500 mi	n-1						
1250	44,5-46,5	1270						٠
A 37,	5 PS / 2500 mi	n-1						
1250	45,5-47,5	1270						

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel deliv	rery characteristics	Starting Idle switchin	,	intermedi rotational Torque-c	speed
rev/min	cm <sup>®</sup> 71000 strokes	rev/min	rev/min	crn <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	travel rev/min	mm
	2	3	<del>-</del>	3	<del> °</del>		-	<del></del>

F 40,5 PS / 2400 min<sup>-1</sup>
1200 46,0-48,0 1220

B 39 PS / 2400 min<sup>-1</sup>
1200 44,0-46,0 1220

A 36 PS / 2400 min-1 1200 45,0-47,0 1220

F 39 PS / 2300 min-1 -1150 44,0-46,0 1170

B 37,5 PS / 2300 min<sup>-1</sup>
1150 42,5-44,5 1170

A 34,5 PS / 2300 min<sup>-1</sup>
1150 42,5-44,5 1170

F 37,5 PS / 2200 min<sup>-1</sup>
1100 41,5-43,5 1120

B 36 PS / 2200 min-1 1100 39,5-41,5 1120

A 33 PS / 2200 min-1 1100 41,0-43,0 1120

F 36 PS / 2100 min<sup>-1</sup>
1050 41,0-43,0 1060

B 34,5 PS / 2100 min<sup>-1</sup> 1050 39,0-41,0 1060

A 31,5 PS / 2100 min<sup>-1</sup>
1050 39,0-41,0 1060

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Checking values in brackets

\* 1 mm less control rod traval than col 2

(1)

## C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)	Rotational-speed limitation	Fuel deli	very characteristics	Starting Idle switching	fuel delivery	Intermedi rotational Torque-d travel	speed
rev/min cm <sup>2</sup> /1000 stroke	rev/min	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm ·

F 34,5 PS / 2000 min<sup>-1</sup>

1000 40,0-42,0 1010

B 33 PS / 2000 min<sup>-1</sup>

1000 38,5-40,5 1010

A 30 PS / 2000 min-1

1000 39,5-41,5 1010

B 30 PS / 1800 min-1

900 38,5-40,5 910

A 27 PS / 1800 min-1

900 38,5-40,5 910

B 24 PS / 1500 min-1

750 37,5-39,5

A 22,5 PS / 1500 min<sup>-1</sup>

750 38,0-40,0 760

760

0

#### C. Settings for Fuel Injection Pump with Fitted Governor

engine p Full-load ( Control-re Test oil te	delivery	Rotational-speed limitation	Fuel deln	very characteristics	Starting Idle switchin	fuel delivery ng point	Intermed rotationa Torque- travel	I speed
rev/min	cm <sup>9</sup> 1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes		mm
	2	3	4	5	6	7	8	
F 62	PS / 3000 min <sup>-</sup>	1	'	•	•	•	•	•
1500	46,0-48,0	1520						
B 60	PS / 3000 min <sup>-</sup>	1						
1500	44,5-46,5	1′520						
A 56	PS / 3000 min-	1	<del></del>					
1500	45,5-47,5	1520						
F 60	PS / 2800 min <sup>-</sup>	1				<del></del>		
1400	46,0-48,0	1420						
B 58 I	PS / 2800 min-	1	<del></del>				<del></del>	
1400	44,0-46,0	1420						
A 54 I	PS / 2800 min-	1						
1400	46,0-48,0	1420						
F 58 I	PS / 2600 min	-1	<del></del>					
1300	46,0-48,0	1320						
B 56 F	PS / 2600 min-1	]						
1300	44,5-46,5	1320						
4 52 F	os / 2600 min-1							
1300	45,5-47,5	1320						
EC I	05 / 2500 min=1	1						

#### F 56 PS / 2500 min-1

1250 46,0-48,0 1270

#### B 54 PS / 2500 min-1

1250 43,5-45,5 1270

#### A 50 PS / 2500 min<sup>-1</sup>

1250 44,5 - 46,5 1270

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Checking values in brackets

\* 1 mm less control rod travel than col 2

E10

		Т		T		T	
engine power Full-toad delivery Control-rod stop Test oil temp 40°C (104°F)	Rotational-speed limitation	Fuel deli	very characteristics	Starting Idle switchin	fuel delivery	intermed rotationa Torque- travei	speed
rev/min cm³/1000 strokes	rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
F 54 PS / 2400 min <sup>-1</sup>		1		+			1
1200 44,5-46,5	1220						
B 52 PS / 2400 min-	1						
1200 43,0-45,0	1220						
A 48 PS / 2400 min-							
1200 44,0-46,0	1220						
F 52 PS / 2300 min-	1						
1150 42,5-44,5	1170						
B 50 PS / 2300 min-	1						
1150 41,0-43,0	1170						
A 46 PS / 2300 min-	1						
1150 42,0-44,0	1170						
F 50 PS / 2200 min-	1						
1100 42,0-44,0	1120						
B 48 PS / 2200 min-	1						
1100 40,0-42,0	1120						
A 44 PS / 2200 min-	1						
1100 41,0-43,0	1120						
F 48 PS / 2100 min-	1						
1050 40,0-42,0	1060					•	
B 46 PS / 2100 min-	1						
1050 38,5-40,5	1060						-
A 42 PS / 2100 min	1			<del></del>			
1050 39,0-41,0	1060						

# Testoil-ISO 4113

Checking values in brackets

\* 1 mm less control rod travel than col. 2

0

#### C. Settings for Fuel Injection Pump with Fitted Governor

engine por Full-load de Control-rod Test oil terr	elivery	Rotational-speed limitation	Fuel delin	very characteristics	Starting Idle switching	fuel delivery ng point	Intermedi rotational Torque-c travel	speed
rev/min	cm <sup>3</sup> 1000 strakes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
		T			-	J	1 —	1

1	2	3	4	5	6	7	8	
F 46	PS / 2000 min 40,5-42,5	1010	•	ı		1		•
B 44 1000	PS / 2000 min- 38,5-40,5	<u>1</u> 1010						arminin demonstration de la constante de la constante de la constante de la constante de la constante de la co
A 40 1000	PS / 2000 min- 39,0-41,0	1 1010						
B 40 900	PS / 1800 min- 38,5-40,5	910						
A 36 900	PS / 1800 min <sup>-</sup> 38,0-40,0	910						
B 32 750	PS / 1500 min <sup>-</sup> 36,5-38,5	760						
A 30 750	PS / 1500 min <sup>-</sup> 38,5-40,5							

engine po Full-toad o Control-ro Test oil te	delivery	Rotational-speed iimitation	Fuel deln	very characteristics	ldle	fuel delivery	Intermed rotationa Torque- travel	speed
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	lww
1	2	3	4	5	6	7	8	<b> </b>
F 93	PS / 3000 min	· <u>1</u>						
1500	45,0-47,0	1520						
B 90	PS / 3000 min	1						
1500	43,5-45,5	1520				•		
A 84	PS / 3000 min	1	<del></del>					
1400	44,5-46,5	1520						
F 90	PS / 2800 min-	1			<del></del>			
1400	45,5-47,5	1420						
B 87	PS / 2800 min <sup>-</sup>	1						
1400	44,0-46,0	1420						
A 81	PS / 2800 min	1						
1400	45,0-47,0	1420						
F 87	PS / 2600 min <sup>-</sup>	1						
1300	45,5-47,5	1320						
B 84	PS / 2600 min-	1						
1300	44,0-46,0	1320						
	PS / 2600 min <sup>-</sup>	_						
1300	45,5-47,5	1320						
	PS / 2500 min <sup>-</sup>	1						<del></del>
1250	45,0-47,0	1270						
B 81	PS / 2500 min-	1						
1250	43,0-45,0	1270						

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1270

1250

A 75 PS / 2500 min-1

44,0-46,0

engine po	wer							
Full-load de Control-roo Test oil ten		Rotational-speed limitation	Fuel deli	very characteristics	Starting Idle switching	fuel delivery ng point	Intermed rotationa Torque-	speed
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	l .	cm <sup>3</sup> /1000 strakes	rev/min	l ww
1	2	3	⁴	5	6	7	8	<b></b>
F 81 P	S / 2400 min <sup>-1</sup>	• •						
1200	44,0-46,0	1220						
B 78 P	S / 2400 min <sup>-1</sup>	_					··	
1200	42,5-44,5	1220						
A 72 P	S / 2400 min-1							
1200	43,5-45,5	1220						
F 78 P	S / 2300 min <sup>-1</sup>						<del></del>	
1150	42,5-44,5	1170						
B 75 P	S / 2300 min <sup>-1</sup>							
1150	41,0-43,0	1170						
A 69 P	S / 2300 min <sup>-1</sup>			,				<del></del>
1150	41,5-43,5	1170						
F 75 PS	S / 2200 min <sup>-1</sup>						***************************************	
1100	41,0-43,0	1120						
B 72 PS	S / 2200 min-1	-						
1100	39,5-41,5	1120						
A 66 PS	5 / 2200 min-1	-					<del></del>	<del> </del>
1100	40,0-42,0	1120						•
F 72 PS	5 / 2100 min-1						<del></del>	
1050	40,0-42,0	1060						
B 69 PS	5 / 2100 min-1							
1050	38,0-40,0	1060						
A 63 PS	5 / 2100 min <sup>-1</sup>	•					<del> </del>	
1050	39,0-41,0	1060						

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Checking values in brackets

\* 1 mm less control rod travel than col 2

Control-roo	wer elivery distop np 40°C (104°F)	Rotational-speed limitation	Fuel deliv	very characteristics	Starting idle switchir	fuel delivery	Intermediate rotational speed Torque-control travel	
ev/min	cm <sup>®</sup> 71000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 69 F	S / 2000 min	1	'	•	•	•	•	•
1000	39,5-41,5	1010						
B 66 P	S / 2000 min	1						
1000	38,0-40,0	1010						
A 60 P	S / 2000 min-	1			<del></del>			
1000	38,0-40,0	1010						
B 60 P	S / 1800 min-	1						·
900	36,5-38,5	910						
A 54 P	S / 1800 min-	1						
900	38,0-40,0	910						
B 48 P	S / 1500 min	1						-
750	36,5-38,5	760						
A 45 P	S / 1500 min-	1						
750	38,0-40,0	760						

0

#### C. Settings for Fuel Injection Pump with Fitted Governor

engine po Full-load o Control-ro Test oil tei	ielivery	Rotational-speed limitation	Fuel dela	very characteristics	Starting Idle switchir	fuel delivery ng point	Intermed rotationa Torque-t	speed
rev/min	cm <sup>3</sup> 71000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes		lww
1	2	3	4	5	6	7	88	ļ
F 46,5	5 PS / 3000 mi	in-1	•	•	·	•		
1500	49,5-51,5	1520						
B 45 I	PS / 3000 min	·1				<del></del>		
1500	48,5-50,5	1520						
A 42 I	PS / 3000 min	·1			<del></del>			
1500	48,5-50,5	1520						
F 45 I	PS / 2800 min	-1		and the state of the second second second second second second second second second second second second second			<del></del>	
1400	50,0-52,0	1420						
B 43,	5 PS / 2800 mi	in-1					<del></del>	
1400	49,0-51,0	1420						
A 40,	5 PS / 2800 m	in-1					<del></del>	
1400	49,0-51,0	1420						
F 43,	5 PS / 2600 m	in-1						
1300	49,0-51,0	1320						
B 42	PS / 2600 min	-1						
1300	47,5-49,5	1320						
A 39	PS / 2600 min	-1						
1300	48,5-50,5	1320						

F 42 PS / 2500 min<sup>-1</sup>

1250 48,5-50,5

1270

B 40,5 PS / 2500 min<sup>-1</sup>

1250 47,0-49,0

1270

A 37,5 PS / 2500 min<sup>-1</sup>

1250 48,0-50,0

1270

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Checking values in brackets

\* 1 mm less control rod travel than col 2

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Relational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		intermediate rotational speed Torque-control	
rev/min	cm <sup>2</sup> 1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/ma	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

F 40,5 PS / 2400 min<sup>-1</sup>
1200 47,5-49,5 1220

B 39 PS / 2400 min<sup>-1</sup>
1200 46,5-48,5 1220

A 36 PS / 2400 min<sup>-1</sup>
1200 47,5-49,5 1220

F 39 PS / 2300 min<sup>-1</sup>

1150 47,0-49,0 1170

B 37,5 PS / 2300 min<sup>-1</sup> 1150 45,5-47,5 1170

A 34,5 PS / 2300 min<sup>-1</sup>
1150 47,0-49,0 1170

F 37,5 PS / 2200 min<sup>-1</sup>
1100 46,5-48,5 1120

B 36 PS / 2200 min<sup>-1</sup>
1100 45,0-47,0 1120

A 33 PS / 2200 min<sup>-1</sup>
1100 46,0-48,0 1120

F 36 PS / 2100 min<sup>-1</sup>
1050 45,5-47,5

B 34,5 PS / 2100 min<sup>-1</sup> 1050 44,0-46,0 1060

A 31,5 PS / 2100 min<sup>-1</sup>
1050 45,5-47,5 1060

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1060

engine po Full-load ( Control-ro Test oil te	delivery	Rotational-speed limitation	Fuel deln	very characteristics	cs Starting fuehdelivery idle switching point		intermediate rotational speed Torque-control travel		
rev/min	cm <sup>3</sup> 1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rokes rev/min cm <sup>3</sup> /1000 strokes		rev/min	mm mm	
1	2	3	4	5	6	7	8		
F 34,	5 PS / 2000 mi	, n-1	1		· .	•	•		
1000	44,5-46,5	1010							
B 33	PS / 2000 min	1							
1000	43,5-45,5	1010						•	
A 30	PS / 2000 min-	1		<del></del>		<del></del>			
1000	44,5-46,5	1010						•	
B 30	PS / 1800 min <sup>-</sup>	1						<del></del>	
900	42,0-44,0	910							
A 27	PS / 1800 min <sup>-</sup>	1		<del></del>		<del></del>			
900	44,0-46,0	910							

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760

 $A 22,5 / 1500 \, min^{-1}$ 

43,0-45,0

750

engine p Full-load Control-i Test oil t	delivery	Rotational-speed firmitation	Fuel deliv	very characteristics	Starting Idle switchii	fuel delivery ng point	Intermed rotationa Torque-	speed
rev/min 1	cm <sup>2</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7		mm
F 62	PS / 3000 min-	1						•
1500	46,5-48,5	1520						
B 60	PS / 3000 min-	1						
1500	45,0-47,0	1520						
A 56	PS / 3000 min-	1						
1500	45,0-47,0	1520						
F 60	PS / 2800 min-	1						
1400	47,0-49,0	1420						
B 58	PS / 2800 min-	1						
1400	45,0-47,0	1420						
A 54	PS / 2800 min-	1						
1400	45,5-47,5	1420						
F 58	PS / 2600 min <sup>-</sup>	1						
1300	46,0-48,0	1320				_		
B 56	PS / 2600 min-	1						
1300	44,0-46,0	1320						
A 52	PS / 2600 min	1						
1300	45,0-47,0	1320						
F 56	PS / 2500 min-	1						
1250	45,0-47,0	1270						
B 54	PS / 2500 min	1						
1250	43,5-45,5	1270						
A 50	PS / 2500 min-	1					***************************************	<del></del>
1250	44,5-46,5	1270						

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## C. Settings for Fuel Injection Pump with Fitted Governor

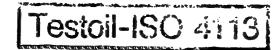
engine p Full-toad ( Control-re Test oil te	delivery	Rotational-speed limitation	Fuel delin	very characteristics	Starting Idle switchir	fuel delivery ng point	intermed rotationa Torque- Iravel	speed
rev/min	cm <sup>2</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	В	
F 54 F	S / 2400 min <sup>-1</sup>		•	•		•		
1200	44,5-46,5	1220						
B 52 F	S / 2400 min <sup>-1</sup>							
1200	43,0-45,0	1220						
A 48 F	S / 2400 min <sup>-1</sup>							
1200	44,0-46,0	1220						
F 52 F	PS / 2300 min <sup>-1</sup>							
1150	43,5-45,5	1170						
B <b>50</b> F	PS / 2300 min <sup>-</sup> 1							
1150	42,0-44,0	1170						
A 46 F	PS / 2300 min <sup>-1</sup>							
1150	43,5-45,5	1170						
F 50 F	PS / 2200 min-1							
1100	43,0-45,0	1120						
B 48 F	PS / 2200 min <sup>-1</sup>							
1100	41,0-43,0	1120						
A 44 I	PS / 2200 min <sup>-1</sup>	_						
1100	42,5-44,5	1120						
F 48 I	PS / 2100 min <sup>-1</sup>	_				***************************************		
1050	42,0-44,0	1060						
B 46 I	PS / 2100 min <sup>-1</sup>							······································
1050	40,5-42,5	1060						
A 42 I	PS / 2100 min <sup>-1</sup>							
1050	41,5-43,5	1060						

0

#### C. Settings for Fuel Injection Pump with Fitted Governor

engine po Full-load d Control-roi Test oil ten	elivery	Rotational speed limitation	Fuel deliv	very characteristics	Starting Idle switchir	fuel delivery	Intermediate rotational speed Torque-control travel	
rev/min	cm <sup>3</sup> 71000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes		l ww
1	2	3	4	5	6	7	8	
F 46 I	' 'S / 2000 min	· <u>·</u> 1	ı	•	•	i	•	•

41,5-43,5 1000 1010 B 44 PS / 2000 min<sup>-1</sup> 40,0-42,0 1000 1010 A 40 PS / 2000 min-1 41,0-43,0 1000 1010 B 40 PS / 1800 min-1 900 38,0-40,0 910 A 36 PS / 1800 min<sup>-1</sup> 40,0-42,0 900 910 A 30 PS / 1500 min-1 39,5-41,5 750



760

0

#### C. Settings for Fuel Injection Pump with Fitted Governor

engine po Full-load o Control-ro Test oil te	delivery	Rotational-speed limitation		very characteristics	Idle	fuel delivery	intermed rotationa Torque-	speed
rey/min	cm <sup>3</sup> /1000 strokes	rev/min	₹ev/min	cm <sup>3</sup> /1000 strokes	1	cm <sup>3</sup> /1000 strokes	travel	
1	2	3	4 \	5	6	7	8	
F 93 I	PS / 3000 min <sup>-</sup> 46,0-48,0	1520						
B 90 I 1500	PS / 3000 min <sup>-</sup> 44,5-46,5	<u>1</u> 1520						
A 84 I	PS / 3000 min <sup>-</sup> 44,5-46,5	<u>1</u> 1520						
F 90 1	PS / 2800 min <sup>-</sup> 46,5-48,5	1420						
B 87 I	PS / 2800 min <sup>-</sup> 44,5-46,5	1420						
A 81 1	PS / 2800 min <sup>-</sup> 45,0-47,0	1420						
F 87	PS / 2600 min <sup>-</sup> 45,5-47,5	1320						
B 84	PS / 2600 min 44,0-46,0	1320						
A 78	PS / 2600 min <sup>-</sup> 44,5-46,5	1320					and the second second second second second second second second second second second second second second seco	•
F 84 1250	PS / 2500 min <sup>-</sup> 45,0-47,0	<u>1</u> 1270						
B 81	PS / 2500 min	1						

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1270

1270

43,0-45,0

44,0-46,0

A 75 PS / 2500 min-1

1250

1250

①

#### C. Settings for Fuel Injection Pump with Fitted Governor

engine p Full-load Control-re Test oil te	delivery	Rotational-speed fimitation	Fuel deliv	very characteristics	Starting Idle switchin	fuel delivery ig point	Intermed rotationa Torque-i	speed
rev/min	cm <sup>®</sup> 71000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes		cm <sup>3</sup> /1000 strokes	rev/min	mm
1-	2	3	4	5	6	7	8	
F 81	PS / 2400 min-	1						
1200	44,0-46,0	1220						
B 78	PS / 2400 min-	1						
1200	42,5-44,5	1220						
A 72	PS / 2400 min-	1						
1200	43,5-45,5	1220						
F 78	PS / 2300 min <sup>-</sup>	1						
1150	43,5-45,5	1170						
B 75	PS / 2300 min	1						
1150	41,5-43,5	1170						
A 69	PS / 2300 min	1						
1150	42,5-44,5	1170						
F 75	PS / 2200 min-	1						
1100	42,5-44,5	1120						
B 72	PS / 2200 min	1						
1100	41,0-43,0	1120						
A 66	PS / 2200 min	1						
1100	42,0-44,0	1120						
F 72	PS / 2100 min <sup>-</sup>	1						
1050	41,5-43,5	1070						
B 69	PS / 2100 min-	1						
1050	40,0-42,0	1070						
A 63	PS / 2100 min	1						
1050	41,0-43,0	1070						

engine power Full-toad delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel deli	very characteristics	cs Starting fuel delivery lidle switching point			ate spead control
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>\$</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes	travel rev/min 8	<b>m</b> m

F 69 PS / 2000 min-1 1000 41,0-43,0 1010 B 66 PS / 2000 min-1 39,5-41,5 1000 1010 A 60 PS / 2000 min-1 40,5-42,5 1000 1010 B 60 PS / 1800 min-1 900 38,0-40,0 910 A 54 PS / 1800 min<sup>-1</sup> 900 40,0-42,0 910 A 45 PS / 1500 min<sup>-1</sup> 38,5-40,5 750 760

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## Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MWM 1,5 c

4. Edition

En

PES 2 A 75D..RS1235,1252,1298 supersedes 7.77 EP/RSV 300-1000A7B505DR 80 ..RS1236,1239,1299 company: MWM ..RS1237,1246,1276,1301 D 208 engine: 6 ..RS1238,1302 EP/RSV 325-1500 A2B505DR D 308 -As from FD 823 the idle auxiliary-spring has been changed D 225 -2.6 from 1 424 641 000 to ... 001. New values enclosed. D 325 -All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

**A. Fuel Injection Pump Settings** 

D 226 D 327

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  "C" and "D"  cm³/100 strokes  3 7,5 Ø	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  "C" and "D"  cm³/100 strokes  3 8 Ø	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,2-6,6	0,4	9	4,1-4,5	
	9	3,2-3,7		6	1,2-2,0	
200	9	2,1-2,8		9	2,7-3,7	
		•				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

300-1000

Upper	rated speed		Intermediate	rated spe	ed	4 Lowe	r rated spe	ed	(3) To:	que control
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel
1	2	3	4	5	6	7	8	9	10	11
ca.68	1000	16,0				ca.28	300	5,5	-	-
	1050 1100	8,5 2,4	withou spring		iliary		100 300	19 - 21 5,7-6,3		
63.67	1030 1070 1120	8,0-9,0 2,0-4,0 0,3-1,0	with a spring		ary		450	0 - 1		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-load stop					Starting Idle	fuel delivery	5a idle stop	
Test oil temp rev/min 1	cm <sup>3</sup> /1000 strokes	Note: changed to rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
Page 3	- 33!							

Checking values in brackets

\* 1 mm less control rod travel than col. 2

#### **B. Governor Settings**

325-1500

Degree of deflection of control lever	r rated speed Control rod travel mm	rev/min  Control rod  travel  mm rev/min  3	Intermed	diate rated	speed	Control- lever deflection in degrees 7		rated speed Control rod travel mm	3 To	rque control Control rod travel mm
ca.58	1500 1580 1630	16,0 9,0 4,2	witho sprin	ut aux	iliar	ca.20	325 100	5,5 19 - 21	-	•
ca.56	1530 1580 1620	8,0-9,0 3,0-4,0 0,3-1,0	'	auxili	iary		325 420 520	5,7-6,3 1,4-3,4 0 - 1		

#### C. Settings for Fuel Injection Pump with Fitted Governor

Pull-load stop Test oil temp. 40°C (104°F)		Rotational- speed limitat.	33 F	Ga Fuel delivery characteristics		fuel delivery 5	4a Idle stop		
rev/min	cm <sup>3</sup> /1000 strokes	Note: changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm	
Page	3 - 33!								

Checking values in brackets

\* 3 mm less control rod travel than col. 2

The nameplate described at  $\underline{\text{MWM 1.5 a}}$  has recently been extended to 2 speeds and 2 deliveries - in column n = (speed) and Q = (full-load delivery) for more accurate setting in the case of governors with torque control.

The following points apply, deviating from WPP 001/4, Supplement 1, setting the governor and the pump:

- (2) Setting according to nameplate n = (speed 1) and Q = (delivery 1); or according to columns 1 and 2
- (3) Is contacted until change of control-rod travel, as read under (2), or (with new nameplate) until the 2 delivery is reached at speed 2; or according to columns 4 and 5
- (6) Is adjusted according to nameplate n = (speed 1 + 20 rpm) or column 3

For repairs on Fendt tractors on which the new nameplate (with 2 speeds and 2 deliveries) has not yet been introduced, the full-load data apply - ordered according to engine types -

#### according to the above note

In the case of new replacement pumps from Stuttgart warehouse there is no spring retainer. Send for from MWM according to old nameplate!

#### Full-load data for Fendt tractor vehicles D 208/308

only valid for engines with pumps PES 3 A 75 C 320/3 RS 1236 a. 39 PES 4 A 75 C 320/3 RS 1237

rev/min   cm³1000 strokes   rev/min   cm³11000 strokes   rev/min   cm³1000 trokes   rev/min   cm³100 strokes   rev/min   cm²100 strokes   rev/min   cm³100 strokes   rev/min   cm³100 strokes   rev/min   cm²100 strokes   rev/min   cm²100 strokes   rev/min   cm²100 strokes   rev/min	engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel deliv	very characteristics	Starting Idle switchir	fuel delivery	Intermediate rotational speed Torque-control travel		
Fendt tractors- Output at speed - Engine and tractor type  32 PS / 2100 min <sup>-1</sup> D 208 - 3 - Farmer 2 D -  1050 36,0-37,0 1070 700 39,0-41,0  32 PS / 1050 min <sup>-1</sup> D 308 - 3 - 231 GT -  975 36,0-37,0 990 700 39,0-41,0  38 PS / 2600 min <sup>-1</sup> D 208 - 3 - Farmer 2 -  1300 35,0-36,0 1320 700 36,0-38,0  55 PS / 2400 min <sup>-1</sup> D 208 - 4 - Farmer 4 S -  1200 41,0-42,0 1220 700 42,0-44,0  General fitting - Output at speed  D 208 - 2  F 31 PS / 3000 min <sup>-1</sup> 1500 41,5-43,5 1520  A 28 PS / 3000 min <sup>-1</sup> 1500 41,5-43,5 1520  F 30 PS / 2800 min <sup>-1</sup> 1400 41,5-43,5 1420  B 29 PS / 2800 min <sup>-1</sup> 1400 40,0-42,0 1420  A 27 PS / 2800 min <sup>-1</sup>	rev/min	cm <sup>2</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes		ពាកា	
32 PS / 2100 min <sup>-1</sup> D 208 - 3 - Farmer 2 D - 1050 36,0-37,0 1070 700 39,0-41,0  32 PS / 1050 min <sup>-1</sup> D 308 - 3 - 231 GT - 975 36,0-37,0 990 700 39,0-41,0  38 PS / 2600 min <sup>-1</sup> D 208 - 3 - Farmer 2 - 1300 35,0-36,0 1320 700 36,0-38,0  55 PS / 2400 min <sup>-1</sup> D 208 - 4 - Farmer 4 S - 1200 41,0-42,0 1220 700 42,0-44,0  General fitting - Output at speed  D 208 - 2 F 31 PS / 3000 min <sup>-1</sup> 1500 41,5-43,5 1520  B 30 PS / 3000 min <sup>-1</sup> 1520  A 28 PS / 3000 min <sup>-1</sup> 1520  F 30 PS / 2800 min <sup>-1</sup> 1420  B 29 PS / 2800 min <sup>-1</sup> 1420  A 27 PS / 2800 min <sup>-1</sup> 1420  A 27 PS / 2800 min <sup>-1</sup> 1420	1	2	3	4	5	6	7	8		
1050 36,0-37,0 1070 700 39,0-41,0  32 PS / 1050 min <sup>-1</sup> D 308 - 3 - 231 GT -  975 36,0-37,0 990 700 39,0-41,0  38 PS / 2600 min <sup>-1</sup> D 208 - 3 - Farmer 2 -  1300 35,0-36,0 1320 700 36,0-38,0  55 PS / 2400 min <sup>-1</sup> D 208 - 4 - Farmer 4 S -  1200 41,0-42,0 1220 700 42,0-44,0  General fitting - Output at speed  D 208 - 2  F 31 PS / 3000 min <sup>-1</sup> 1500 41,5-43,5 1520  B 30 PS / 3000 min <sup>-1</sup> 1500 41,5-43,5 1520  F 30 PS / 2800 min <sup>-1</sup> 1400 41,5-43,5 1420  B 29 PS / 2800 min <sup>-1</sup> 1400 40,0-42,0 1420  A 27 PS / 2800 min <sup>-1</sup>				_		or ty	pe			
32 PS / 1050 min <sup>-1</sup> D 308 - 3 - 231 GT - 975 36,0-37,0 990 700 39,0-41,0  38 PS / 2600 min <sup>-1</sup> D 208 - 3 - Farmer 2 - 1300 35,0-36,0 1320 700 36,0-38,0  55 PS / 2400 min <sup>-1</sup> D 208 - 4 - Farmer 4 S - 1200 41,0-42,0 1220 700 42,0-44,0  General fitting - Output at speed  D 208 - 2 F 31 PS / 3000 min <sup>-1</sup> 1500 41,5-43,5 1520  A 28 PS / 3000 min <sup>-1</sup> 1500 41,5-43,5 1520  F 30 PS / 2800 min <sup>-1</sup> 1400 41,5-43,5 1420  B 29 PS / 2800 min <sup>-1</sup> 1400 40,0-42,0 1420  A 27 PS / 2800 min <sup>-1</sup>	32 PS	/ 2100 min <sup>-1</sup>	D 208 - 3	- Far	mer 2 D -					
975 36,0-37,0 990 700 39,0-41,0  38 PS / 2600 min <sup>-1</sup> D 208 - 3 - Farmer 2 -  1300 35,0-36,0 1320 700 36,0-38,0  55 PS / 2400 min <sup>-1</sup> D 208 - 4 - Farmer 4 S -  1200 41,0-42,0 1220 700 42,0-44,0  General fitting - Output at speed  D 208 - 2  F 31 PS / 3000 min <sup>-1</sup> 1500 41,5-43,5 1520  B 30 PS / 3000 min <sup>-1</sup> 1500 41,5-43,5 1520  F 30 PS / 2800 min <sup>-1</sup> 1400 41,5-43,5 1420  B 29 PS / 2800 min <sup>-1</sup> 1400 40,0-42,0 1420  A 27 PS / 2800 min <sup>-1</sup>	1050	36,0-37,0	1070	700	39,0-41,0					
38 PS / 2600 min <sup>-1</sup> D 208 - 3 - Farmer 2 - 1300 35,0-36,0 1320 700 36,0-38,0  55 PS / 2400 min <sup>-1</sup> D 208 - 4 - Farmer 4 S - 1200 41,0-42,0 1220 700 42,0-44,0  General fitting - Output at speed  D 208 - 2 F 31 PS / 3000 min <sup>-1</sup> 1500 41,5-43,5 1520  B 30 PS / 3000 min <sup>-1</sup> 1500 39,5-41,5 1520  A 28 PS / 3000 min <sup>-1</sup> 1500 41,5-43,5 1520  F 30 PS / 2800 min <sup>-1</sup> 1400 41,5-43,5 1420  B 29 PS / 2800 min <sup>-1</sup> 1400 40,0-42,0 1420  A 27 PS / 2800 min <sup>-1</sup>	32 PS	/ 1050 min <sup>-1</sup>	D 308 - 3	- 231	GT -					
1300 35,0-36,0 1320 700 36,0-38,0  55 PS / 2400 min <sup>-1</sup> D 208 - 4 - Farmer 4 S - 1200 41,0-42,0 1220 700 42,0-44,0  General fitting - Output at speed  D 208 - 2 F 31 PS / 3000 min <sup>-1</sup> 1500 41,5-43,5 1520  B 30 PS / 3000 min <sup>-1</sup> 1500 39,5-41,5 1520  A 28 PS / 3000 min <sup>-1</sup> 1500 41,5-43,5 1520  F 30 PS / 2800 min <sup>-1</sup> 1400 41,5-43,5 1420  B 29 PS / 2800 min <sup>-1</sup> 1400 40,0-42,0 1420  A 27 PS / 2800 min <sup>-1</sup>	975	36,0-37,0	990	700	39,0-41,0					
55 PS / 2400 min <sup>-1</sup> D 208 - 4 - Farmer 4 S - 1200 41,0-42,0 1220 700 42,0-44,0  General fitting - Output at speed D 208 - 2 F 31 PS / 3000 min <sup>-1</sup> 1500 41,5-43,5 1520  B 30 PS / 3000 min <sup>-1</sup> 1500 39,5-41,5 1520  A 28 PS / 3000 min <sup>-1</sup> 1500 41,5-43,5 1520  F 30 PS / 2800 min <sup>-1</sup> 1400 41,5-43,5 1420  B 29 PS / 2800 min <sup>-1</sup> 1400 40,0-42,0 1420  A 27 PS / 2800 min <sup>-1</sup>	38 PS	/ 2600 min-1	D 208 - 3	- Far	mer 2 -					
1200 41,0-42,0 1220 700 42,0-44,0  General fitting - Output at speed  D 208 - 2 F 31 PS / 3000 min-1 1500 41,5-43,5 1520  B 30 PS / 3000 min-1 1500 39,5-41,5 1520  A 28 PS / 3000 min-1 1500 41,5-43,5 1520  F 30 PS / 2800 min-1 1400 41,5-43,5 1420  B 29 PS / 2800 min-1 1400 40,0-42,0 1420  A 27 PS / 2800 min-1	1300	35,0-36,0	1320	700	36,0-38,0					
General fitting - Output at speed  D 208 - 2 F 31 PS / 3000 min <sup>-1</sup> 1500 41,5-43,5 1520  B 30 PS / 3000 min <sup>-1</sup> 1500 39,5-41,5 1520  A 28 PS / 3000 min <sup>-1</sup> 1500 41,5-43,5 1520  F 30 PS / 2800 min <sup>-1</sup> 1400 41,5-43,5 1420  B 29 PS / 2800 min <sup>-1</sup> 1400 40,0-42,0 1420  A 27 PS / 2800 min <sup>-1</sup>	55 PS	/ 2400 min <sup>-1</sup>	D 208 - 4	- Far	mer 4 S -					
D 208 - 2 F 31 PS / 3000 min <sup>-1</sup> 1500 41,5-43,5 1520  B 30 PS / 3000 min <sup>-1</sup> 1500 39,5-41,5 1520  A 28 PS / 3000 min <sup>-1</sup> 1500 41,5-43,5 1520  F 30 PS / 2800 min <sup>-1</sup> 1400 41,5-43,5 1420  B 29 PS / 2800 min <sup>-1</sup> 1400 40,0-42,0 1420  A 27 PS / 2800 min <sup>-1</sup>	1200	41,0-42,0	1220	700	42,0-44,0					
F 31 PS / 3000 min <sup>-1</sup> 1500 41,5-43,5 1520  B 30 PS / 3000 min <sup>-1</sup> 1500 39,5-41,5 1520  A 28 PS / 3000 min <sup>-1</sup> 1500 41,5-43,5 1520  F 30 PS / 2800 min <sup>-1</sup> 1400 41,5-43,5 1420  B 29 PS / 2800 min <sup>-1</sup> 1400 40,0-42,0 1420  A 27 PS / 2800 min <sup>-1</sup>		•	utput at spee	d						
B 30 PS / 3000 min <sup>-1</sup> 1500 39,5-41,5 1520  A 28 PS / 3000 min <sup>-1</sup> 1500 41,5-43,5 1520  F 30 PS / 2800 min <sup>-1</sup> 1400 41,5-43,5 1420  B 29 PS / 2800 min <sup>-1</sup> 1400 40,0-42,0 1420  A 27 PS / 2800 min <sup>-1</sup>			<u>1</u>							
1500 39,5-41,5 1520  A 28 PS / 3000 min-1 1500 41,5-43,5 1520  F 30 PS / 2800 min-1 1400 41,5-43,5 1420  B 29 PS / 2800 min-1 1400 40,0-42,0 1420  A 27 PS / 2800 min-1	1500	41,5-43,5	1520							
A 28 PS / 3000 min-1 1500 41,5-43,5 1520  F 30 PS / 2800 min-1 1400 41,5-43,5 1420  B 29 PS / 2800 min-1 1400 40,0-42,0 1420  A 27 PS / 2800 min-1	B 30 P	S / 3000 min-	1							
1500 41,5-43,5 1520  F 30 PS / 2800 min <sup>-1</sup> 1400 41,5-43,5 1420  B 29 PS / 2800 min <sup>-1</sup> 1400 40,0-42,0 1420  A 27 PS / 2800 min <sup>-1</sup>	1500	39,5-41,5	1520							
F 30 PS / 2800 min <sup>-1</sup> 1400 41,5-43,5 1420  B 29 PS / 2800 min <sup>-1</sup> 1400 40,0-42,0 1420  A 27 PS / 2800 min <sup>-1</sup>		S / 3000 min-	1							
1400 41,5-43,5 1420  B 29 PS / 2800 min <sup>-1</sup> 1400 40,0-42,0 1420  A 27 PS / 2800 min <sup>-1</sup>	1500	41,5-43,5	1520							
B 29 PS / 2800 min <sup>-1</sup> 1400			1						•	
1400 40,0-42,0 1420 A 27 PS / 2800 min <sup>-1</sup>	1400	41,5-43,5	1420							
A 27 PS / 2800 min <sup>-1</sup>	B 29 P	S / 2800 min <sup>-</sup>	1							
	1400	40,0-42,0	1420							
1400 41,5-43,5 1420	A 27 P	S / 2800 min <sup>-1</sup>								
	1400	41,5-43,5	1420							

# Testoil-ISO 4113

En \$18

Contro	power d delivery I-rod stop temp. 40°C (104°F)	Rotational-speed limitation	Fuel deli	very characteristics	Starting Idle switchin	fuel delivery	intermed rotationa Torque- travel	speed
rev/mir	cm <sup>®</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes		mm
1-	_ 2	13	<del> </del>	2	10	/	10	<del> </del>

						ľ.	travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	1	cm <sup>3</sup> /1000 strokes	tev/min	mm
1	2	3	4	5	6	7	8	
		•	·			-		
	PS / 2600 min-	<del>1</del>						
1300	43,0-45,0	1320						
			· · · · · · · · · · · · · · · · · · ·					
B 28	PS / 2600 min-	<del>1</del>						
1300	41,0-43,0	1320						
A 26	PS / 2600 min-	<u>1</u>						
1300	42,5-44,5	1320						
F 28	PS / 2500 min-	1						
1250	42,5-44,5							
B 27	PS / 2500 min-	1						
1250	40,5-42,5	- 1270						
,,,,,,	40,0 42,0	1270						
A 25	PS / 2500 min	1						
1250	41,5-43,5	- 1270						
1230	71,5-75,5	1270						
F 27	PS / 2400 min-	1						
1200	42,0-44,0	1220						
1200	72,0-44,0	1220						
B 26	PS / 2400 min	1						
1200	40,0-42,0	1220						
1200	40,0-42,0	1220						
A 24	/ 2400 min-1							
1200	41,0-43,0	1220						
1200	41,0-43,0	1220						
F 26	PS / 2300 min-	1						
		-						
1150	41,5-43,5	1170						
B 25	PS / 2300 min	1						
D 23	13 / 2300 IIIII	-						
1150	39,5-41,5	1170						
							<del></del>	
A 23	PS / 2300 min	<u>1</u>						
1150	40 E 42 E	1170						
1100	40,5-42,5	1170						

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel deliv	very characteristics	Starting Idle switchir	luel delivery	intermediate rotational speed Torque-control travel		
rev/min	cm <sup>2</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	i	cm <sup>3</sup> /1000 strokes	rev/min	mm	
1	2	3	-   4	5	6	7	8	<del> </del>	
F 25 F	S / 2200 min-	1							
1100	41,0-43,0	1120							
B 24 F	PS / 2200 min <sup>-</sup>	1							
1100	39,0-41,0	1120							
A 22 F	os / 2200 min	1							
1100	40,0-42,0	1120		,					
	PS / 2100 min	_							
1050	40,5-42,5	1060							
B 23 I	PS / 2100 min								
1050	38,0-40,0	1060							
	PS / 2100 min								
1050	39,0-41,0	1060							
F 23 I	S / 2000 min	1							
1000	39,0-41,0	1010							
B 22 I	S / 2000 min	1							
1000	37,0-39,0	1010							
A 20 I	PS / 2000 min	1							
1000	38,0-40,0	1010				•			
B 20 I	PS / 1800 min	<del></del>							
900	36,0-38,0	910							
A 18	PS / 1800 min	1			-				
900	36,5-38,5	910							
B 16	PS / 1500 min	1			<del>, , , , , , , , , , , , , , , , , , , </del>				
750	34,0-36,0	760							

engine po Full-load di Control-rod Test oil ten	Blivery	Rotational-speed limitation	Fuel deli	very characteristics	Starting Idle switchir	fuel delivery ig point	Intermed rotational Torque-6	speed
rev/min	cm <sup>®</sup> 1000 strokes 2	rev/min	rev/min	cm <sup>S</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	travel rev/min 8	mm )

A 15 PS / 1500 min-1

750 36,0-38,0

760



engine po Full-load o Control-ro Test oil tei	delivery	Rotational-speed limitation	Fuel deli	very characteristics	idle	fuel delivery	intermed rotationa Torque- travel	speed
rev/min	cm <sup>®</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes		cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	<del> </del>
F 46,	5 PS / 3000 mi	n <sup>-1</sup>						
1500	42,0-44,0	1520						
B 45	PS / 3000 min	1					~ <u></u>	
1500	39,0-41,0	1520						
A 42	PS / 3000 min <sup>-</sup>	1						
1500	40,5-42,5	1520						
F 45	PS / 2800 min <sup>-</sup>	1						
1400	42,0-44,0	1420						
B 43,	5 PS / 2800 mi	n <sup>-1</sup>						
1400	39,0-41,0	1420						
A 40,	5 PS / 2800 mi	n-1				***		
1400	40,0-42,0	1420						
F 43,	5 PS / 2600 mi	n-1						
1300	41,5-43,5	1320						
B 42 I	PS / 2600 min	1						
1300	39,5-41,5	1320						
A 39	PS / 2600 min-	1						
1300	40,0-42,0	1320						·
F 42	PS / 2500 min-	1					,	
1250	40,5-42,5	1270						
B 40,	5 PS / 2500 mi	n-1 ·						
1250	38,5-40,5	1270						
A 37,	5 PS / 2500 mi	n-1					-	
1250	39,5-41,5	1270						

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)	Rotational-speed limitation	Fuel deli	very characteristics	Starting Idle switchir	fuel delivery	Intermed rotations Torque- travel	I speed
rev/min cm <sup>2</sup> 71000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes		cm <sup>3</sup> /1000 strokes	rev/min	mm
1 2	3	4	5	6	7	8	-
F 40,5 PS / 2400 mi							
1200 40,5-42,5	1220						
B 39 PS / 2400 min <sup>-</sup>	1						
1200 38,5-40,5	1220						
A 36 PS / 2400 min	1						
1200 39,5-41,5	1220						
F 39 PS / 2300 min	1						
1150 39,5-41,5	1170						
B 37,5 PS / 2300 mi	n-1			<del></del>			
1150 38,0-40,0	1170				•		
A 34,5 PS / 2300 mi	n-1						
1150 38,0-40,0	1170						
F 37,5 PS / 2200 mi	in-1						
1100 38,5-40,5	1120						
B 36 PS / 2200 min	·1						
1100 36,5-38,5	1120						
A 33 PS / 2200 min	·1						
1100 38,0-40,0	1120						
F 36 PS / 2100 min	·1						
1050 38,0-40,0	1060						
B 34,5 PS / 2100 m <sup>-</sup>	in <sup>-1</sup>						
1050 36,0-38,0	1060						
A 31,5 PS / 2100 m	in <sup>-1</sup>						
1050 36,0-38,0	1060						

engine po Full-load o Control-ro Test oil tei	jelivery	Rotational-speed limitation	Fuel deli	very characteristics	Idle	fuel delivery	Intermed rotationa Torque-t	speed
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rév/min	cm <sup>3</sup> /1000 strokes	ten/win	lww
1	2	3	4	5	6	7	8	<b></b>
F 34,	5 PS / 2000 mi	n <sup>-</sup> 1	•	•		•	·	•
1000	37,0-39,0	1010						
B 33	PS / 2000 min <sup>-</sup>	1					<del></del>	
1000	35,5-37,5	1010						
A 30	PS / 2000 min <sup>-</sup>	1	<del></del>	· · · · · · · · · · · · · · · · · · ·			<del></del>	
1000	37,0-39,0	1010						
B 30	PS / 1800 min <sup>-</sup>	1						<del></del>
900	34,0-36,0	910						
A 27	PS / 1800 min <sup>-</sup>	1						<del></del>
900	35,0-37,0	910						
B 24	PS / 1500 min <sup>-</sup>	1						<del></del>
750	33,0-35,0	760						
A 22,	5 PS / 1500 mi	n-1						
750	36,0-38,0	760						

engine power Full-load delivery	Rotational-speed	Fuel dele	very characteristics		fuel delivery	Intermed	
Control-rod stop Test oil temp 40°C (104°F)	limitation		1	ldle switchin	ng point	rotationa Torque-i	
rev/min cm <sup>2</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes		្រាកា
1 2	3	4	5	6	7	8	
F 62 PS / 3000 min <sup>-</sup>	1	1	1	•	•	•	•
1500 40,5-42,5	 1520						
1500 40,5-42,5	1520						
B 60 PS / 3000 min <sup>-</sup>	1						
1500 39,0-41,0	_ 1520						
				<del></del>			
A 56 PS / 3000 min	1						
1500 40,0-42,0	1520						
				<del></del>			
F 60 PS / 2800 min-	1						
1400 40,0-42,0	1420						
							<del></del>
B 58 PS / 2800 min	<u>1</u>						
1400 35,5-37,5	1420						
	A	<del></del>					
A 54 PS / 2800 min-	-						
1400 40,0-42,0	1420						
F 50 DC / 2600				<del></del>		<del></del>	<del></del> -
F 58 PS / 2600 min <sup>-</sup>	<del></del>						
1300 40,0-42,0	1320						
B 56 PS / 2600 min <sup>-</sup>	1			<del></del>			<del></del>
	<del></del>						
1300 38,0-40,0	1320						
A 52 PS / 2600 min <sup>-</sup>	1		<del></del>	<del></del>			
1300 39,0-41,0	 1320						• •
1500 55,0 41,0	1320						
F 56 PS / 2500 min <sup>-</sup>	1						
1250 39,0-41,0	1270						
B 54 PS / 2500 min <sup>-</sup>	1						
1250 37,5-39,5	 1270						
						<u>.</u>	
A 50 PS / 2500 min <sup>-</sup>	1						
1250 39,0-41,0	1270						
						· · · · · · · · · · · · · · · · · · ·	

engine po Full-load ( Control-ro Test oil te	telivery	Rotational-speed limitation	Fuel dem	very characteristics	Starting Idle switchir	fuel delivery ng point	Intermed rotationa Torque- travel	speed
ev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	1	l mm
1	2	3	4	5	6	7	8	<u> </u>
F 54 I 1200	25 / 2400 min <sup>-</sup> 39,0-41,0	1220	•			•		
B 52 F	PS / 2400 min™	1					<del></del>	
1200	37,5-39,5	1220						
A 48 I	PS / 2400 min	1	· · · · · · · · · · · · · · · · · · ·					<del></del>
1200	38,0-40,0	1220						
F 52 I	PS / 2300 min-	1					··· • · · · · · · · · · · · · · · · · ·	
1150	38,0-40,0	1170						
B 50 F	PS / 2300 min-	1	<del></del>					<del></del>
1150	36,5-38,5	 1170						

H	40	P3 /	2300	י מות	
1	150	37	5-39	. 5	

1170

# F 50 PS / 2200 min-1

1100 39,0-41,0

1120

#### B 48 PS / 2200 min-1

37,0-39,0 1100

1120

#### A 44 PS / 2200 min-1

38,0-40,0 1100

1120

#### F 48 PS / 2100 min-1

37,5-39,5 1050

1060

#### B 46 PS / 2100 min<sup>-1</sup>

35,5-37,5 1050

1060

#### A 42 PS / 2100 min<sup>-1</sup>

1050 36,0-38,0 1060

Control-r	delivery	Rotational-speed limitation	Fuel deliv	very characteristics	Starting Idle switchin	luel delivery ig point	Intermedi rotational Torque-c travel	speed
ev/min	cm <sup>8</sup> 71000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes		cm <sup>3</sup> /1000 strokes	1	mm
1	2	3	4	5	6	7	8	<del> </del>
F 46	PS / 2000 min <sup>-</sup>	<u>1</u>						
1000	38,0-40,0	1010						
B 44	PS / 2000 min <sup>-</sup>	1	<del></del>					
1000	35,5-37,5	1010						
A 40	PS / 2000 min-	1						····
1000	36,0-38,0	1010						
B 40	PS / 1800 min <sup>-</sup>	1		**********		<del></del>		
900	34,5-36,5	910						
A 36	PS / 1800 min <sup>-</sup>	1		<del></del>		<del> </del>		
900	34,0-36,0	910						
B 32	PS / 1500 min-	1		<del></del>	<del></del>		<del></del>	
750	30,5-32,5	760						
A 30	PS / 1500 min-	1		<del></del>				
750	33,0-35,0	760						

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engine po Full-load d Control-ro Test oil ter	elivery	Rotational-speed limitation	Fuel deli	very characteristics	Starting Idle switchir	fuel delivery	intermed rotationa Torque- travel	speed
rev/min	cm <sup>®</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 93 P	S / 3000 min	<u>1</u>						
1500	39,5-41,5	1520						
B 90 F	S / 3000 min-	1						
1500	38,0-40,0	1520						
A 84 F	S / 3000 min	1						
1500	39,0-41,0	1520						
F 90 F	PS / 2800 min	1						
1400	39,5-41,5	1420						
B 87 F	PS / 2800 min-	1						
1400	38,0-40,0	1420						
A 81 F	PS / 2800 min	1						
1400	39,0-41,0	1420						
F 87 I	PS / 2600 min	1						
1300	39,5-41,5	1320						
B 84 I	PS / 2600 min <sup>-</sup>	1						
1300	38,0-40,0	1320						
A 78 I	PS / 2600 min	·1						
1300	38,5-40,5	1320						
F 84 I	PS / 2500 min <sup>-</sup>	·1						
1250	39,0-41,0	1270						
B 81 I	PS / 2500 min	·1						
1250	37,0-39,0	1270						
A 75 I	PS / 2500 min <sup>-</sup>	-1						
1250	38,0-40,0	1270						

O. Octomiga for the		- 4111	h MICH LICE	4 40	ACILIOI		
engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)	Rotational-speed limitation		very characteristics	Starting Idle switchir	fuel delivery ig point	Intermed rotationa Torque- travel	speed
rev/min cm <sup>2</sup> /1000 strokes	rev/min		cm <sup>3</sup> /1000 strokes	1	cm <sup>3</sup> /1000 strokes	rev/min	mm
F 81 PS / 2400 min <sup>-</sup>	1	4	5	6	7	8	
1200 38,0-40,0	<u> </u>						
B 78 PS / 2400 min <sup>-</sup> 1200 36,5-38,5	<u>1</u> 1220						
A 72 PS / 2400 min <sup>-</sup> 1200 38,0-40,0	1220						
F 78 PS / 2300 min <sup>-</sup> 1150 38,0-40,0	1170			ì			
B 75 PS / 2300 min <sup>-</sup> 1150 36,5-38,5	1 1170			·			
A 69 PS / 2300 min- 1150 37,0-39,0	<u>1</u> 1170						
F 75 PS / 2200 min- 1100 38,0-40,0	1 1120					;	
B 72 PS / 2200 min <sup>-</sup> 1100 36,0-38,0	1 - 1120						
A 66 PS / 2200 min <sup>-</sup> 1100 37,0-39,0	1 1120						
F 72 PS / 2100 min <sup>-1</sup> 1050 37,0-39,0	1 1060						
B 69 PS / 2100 min <sup>-</sup> 1050 35,5-37,5	1060						
A 63 PS / 2100 min <sup>-1</sup> 1050 36,0-38,0	1060	•					
		<del></del>	<del>*************************************</del>				

engine po Full-load di Control-rot Test oil ten	elivery	Rotational-speed limitation	Fuel deliv	very characteristics	Starting Idle switchir	fuel delivery	Intermed rotationa Torque- travel	speed
rev/min	cm <sup>3</sup> 1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes		mm
1	2	3	4	5	6	7	8	
F 69 P	S / 2000 min-	1	•	•		•		•
1000	36,5-38,5	1010						
B 66 P	'S / 2000 min-	1			<del></del>		<del></del>	· • • • • • • • • • • • • • • • • • • •
1000	34,5-36,5	1010						
A 60 P	PS / 2000 min	1		<del></del>				
1000	35,0-37,0	1010						
B 60 P	S / 1800 min <sup>-</sup>	1						
900	33,5-35,5	910						
A 54 P	S / 1800 min <sup>-</sup>	1			<del></del>		<del></del>	······································
900	34,0-36,0	910						
B 48 P	'S / 1500 min"	1						
750	31,0-33,0	760						
A 45 P	S / 1500 min <sup>-</sup>	1					<del></del>	
750	33,0-35,0	760						

engine po Full-load d Control-ro Test oil ter	elivery	Rotational-speed limitation	Fuel deliv	ery characteristics	Starting Idle switchir	fuel delivery	Intermed rotationa Torque-t	speed
rev/min	cm <sup>2</sup> 71000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 35,5	PS / 3000 min	-1	•	•	•	•		•
1 500	55,0-57,0	1520	800	52,5-55,5				
A 32 P	S / 3000 min-1							
1500	51,0-53,0	1520						
F 41 P	S / 2800 min <sup>-1</sup>							
1400	66,5-68,5	1420	800	55,5-58,5				
F 38,5	PS / 2500 min	-1				***************************************	\ <del></del>	
1250	62,5-64,5	1270	800	55,5-58,5				
B 37 P	S / 2500 min <sup>-1</sup>							
1250	59,5-61,5	1270	800	52,5-55,5				
A 34 P	S / 2500 min <sup>-1</sup>							
1250	55,5-57,5	1270						
F 36,5	PS / 2300 min	-1						
1150	60,5-62,5	1170	800	55,5-58,5				
B 35 P	S / 2300 min-1							
1150	58,5-60,5	1170	800	52,5-55,5				
A 32 P	S / 2300 min <sup>-1</sup>							
1150	53,0-55,0	1170						
F 33 P	S / 2000 min <sup>-1</sup>							
1000	58,5-60,5	1010	750	55,0-58,0				
B 31 P	S / 2000 min-1					<del></del>		
1000	55,0-57,0	1010	750	52,5-55,5				
A 28,5	PS / 2000 min	ı <del>-1</del>						
1000	50,0-52,0	1010						

engine p Full-load Control-ri Test oil te	delivery	Rotational-speed limitation	Fuel deli	very characteristics	Starting Idle switchin	fuel delivery ng point	Intermed rotations Torque- travel	speed
rev/min	cm <sup>2</sup> 71000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	l mm
1	2	3	4	5	6	7	8	<u> </u>
B 28,	5 PS / 1800 m	in <sup>-1</sup>	•	•	-	•		•
900	52,5-54,5	910	750	52,0-55,0				
A 26	PS / 1800 min	-1						·
900	48,0-50,0	910						
B 24	PS / 1500 min	-1					<del></del>	
750	46,5-48,5	760	750	50,5-53,5				
A 22	PS / 1500 min	-1						
750	51,0-53,0	760						

	elivery i stop np. 40°C (104°F)	Rotational-speed ilmitation	Fuel deliv	very characteristics	Idle	fuel delivery	Intermed rotationa Torque-	speed
rev/min	cm <sup>®</sup> 71000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	travel rev/min	լատ
1	2	3	4	5	6	7	8	
R 53 D	S / 3000 min <sup>-1</sup>		•	•		•		
1500	54,5-56,5	- 1520	800	51,0-54,0				
1300	J+,J=J0,J	1320	000	31,0 34,0				
A 48 P	S / 3000 min-1	_						
1500	50,5-52,5	1520						
F 60 D	c / 2000							
	S / 2800 min <sup>-1</sup>	-	000	54 0 57 0				
1400	66,5-68,5	1420	800	54,0-57,0				
F 58 P	S / 2500 min <sup>-1</sup>							
1250	62,5-64,5	1270	800	54,0-57,0				
	S / 2500 min <sup>-1</sup>	<del>-</del>						
1250	59,5-61,5	1270	800	51,0-54,0				
Δ 51 D	S / 2500 min <sup>-1</sup>							
1250	54,5-56,5	1270						
1230	J4,5-50,5	1270						
F 55 P	S / 2300 min-1							
1150	58,5-60,5	1170	800	54,0-57,0				
	S / 2300 min <sup>-1</sup>	=						
1150	57,5-59,5	1170	800	51,0-54,0				
A //Q D	S / 2300 min <sup>-1</sup>				<del></del>			
		-						•
1150	51,5-53,5	1170						
F 49.5	PS / 2000 mir							
1000	57,5-59,5	1010	750	54,0-57,0				
	. ,			,, <del>-</del>				
B 46,5	PS / 2000 mir	1-1						
1000	53,5-55,5	1010	750	51,0-54,0				
V V3 D	c / 20001	· · · · · · · · · · · · · · · · · · ·						<del></del>
A 43 P: 1000	S / 2000 min-1	•						
1000	48,5-50,5	1010						

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel deliv	very characteristics	Starting Idle switchin	fuel delivery ng point	Intermediate rotational speed Torque-contro travel	
rev/min	cm <sup>3</sup> 71000 strokes	rev/min	rav/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes		mm
1	2	3	4	5	6	7	8	<u> </u>
B 43 P	<mark>S / 1800 min<sup>-1</sup></mark>	<u>'</u>	•	•	•	•	•	•
900	52,5-54,5	910	750	52,0-55,0				
39 P	S / 1800 min <sup>-1</sup>		<del></del>				<del> =</del>	
900	47,5-49,5	910						
36 P	S / 1500 min <sup>-1</sup>					<del></del>	<del></del>	
750	49,5-51,5	760	650	49,0-52,0				
A 33 P	S / 1500 min-1		····					
750	45,5-47,5	760						

Control	d delivery rod stop temp 40°C (104°F)	Rotational-speed limitation	Fuel deln	very characteristics	Starting Idle switchin		intermed rotationa Torque- travel	speed
rev/min		rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes		mm
<u> -</u>	2	3	4	5	6	7	8	
B 71	PS / 3000 min-	<u>1</u>						
1500	54,5-56,5	1520	800	62,0-65,0				
A 64	PS / 3000 min	1	<del></del>			The state of the s		
1500	49,5-51,5	1520						
F 83	PS / 2800 min	1					-	•
1400	65,5-67,5	1420	800	63,0-66,0				
F 78	PS / 2500 min	1						
1250	61,5-63,5	1270	800	50,0-53,0				
B 74	,5 PS / 2500 mi	n-1						
1250	58,5-60,5	1270	800	50,0-53,0				
A 68	PS / 2500 min	1	·····					
1250	53,5-55,5	1270						
F 73	PS / 2300 min	1						
1150	60,5-62,5	1170	800	52,0-55,0				
B 71	PS / 2300 min	1						
1150	58,5-60,5	1170	800	50,0-53,0				
A 64	PS / 2300 min-	1						
1150	51,5-53,5	1170						•
F 66	PS / 2000 min	1			-	•		
1000	57,5-59,5	1010	750	52,0-55,0				
B 62	,5 PS / 2000 mi	n-1		<del></del>				<del></del>
1000	53,5-55,5	1010	750	50,0-53,0				
A 57	PS / 2000 min	1		· · · · · · · · · · · · · · · · · · ·				
1000	48,5-50,5	1010						

Testoil-ISO 4113

engine po Full-load o Control-ro Test oil tei	lelivery	Rotational-speed limitation	Fuel deliv	very characteristics	Starting Idle switchin	tuel delivery ig point	Intermed rotational Torque-d	speed
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	1	mm
1	2	3	4	5	6	7	8	
B 57 P	S / 1800 min <sup>-1</sup>	<u>.</u>	•	•	•		·	•
900	51,5-53,5	910	750	49,0-52,0				
		1	•					
A 52 P	S / 1800 min <sup>-1</sup>	- -						
900	45,5-47,5	910						
B 48 P	S / 1500 min <sup>-1</sup>	1						
750	48,5-50,5	760	650	47,0-50,0				
						<del></del>		
4 44 P	S / 1500 min <sup>-</sup>	_						
750	45,5-47,5	760						

Testoil-ISO 4113

engine po Full-load o Control-ro Test oil te	delivery	Rotational-speed limitation	Fuel dela	very characteristics	Starting Idle awitchir	fuel delivery	intermed rotationa Torque- travel	speed
rev/min	cm <sup>2</sup> 71000 strakes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes		mm
1	2	3	4	5	6	7	8	
B 106	PS / 3000 min	- <u>1</u>	•	•	•			•
1500	55,5-57,5	1520	800	50,0-53,0				
A 96 I	PS / 3000 min-	1						
1500	49,5-51,5	1520						
F 125	PS / 2800 min	-1			-			
1400	66,5-68,5	1420	800	54,0-57,0				
F 117	PS / 2500 min	-1						
1250	61,5-63,5	1270	800	54,0-57,0				
B 112	PS / 2500 min	-1				-		
1250	58,5-60,5	1270	800	50,0-53,0				
A 102	PS / 2500 min	-1						
1250	53,5-55,5	1270						
F 110	PS / 2300 min	-1			· <u></u> · · · · · · · · · · · · · · · · · ·			
1150	59,5-61,5	1170	800	54,0-57,0				
B 106	PS / 2300 min	-1						
1150	56,5-58,5	1170	800	50,0-53,0				
A 96 F	PS / 2300 min-	1						
1150	51,5-53,5	1170						
	PS / 2000 min-	1					· · · · · · · · · · · · · · · · · · ·	
1000	56,5-58,5	1010	750	54,0-57,0				
	PS / 2000 min <sup>-</sup>	1						
1000	53,5-55,5	1010	750	50,0-53,0				
A 86 F	PS / 2000 min-	1						
1000	47,5-49,5	1010						

engine p Full-load Control-re Test oil te	delivery	Rotational-speed limitation	Fuel dein	very characteristics	Idle	fuel delivery ng point	Intermed rotationa Torque-	speed
rev/min	cm <sup>2</sup> /1000 strokes	rev/min	rev/min	cm <sup>9</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes		t mm
1	2	3	4	5	6	7	8	
B 86	PS / 1800 min-	1	•	•	•		•	•
900	49,5-51,5	910	750	53,0-56,0				
A 78	PS / 1800 min-	1						
900	46,5-48,5	910						
B 72	PS / 1500 min <sup>-</sup>	1						
750	49,5-51,5	760	650	47,0-50,0				
A 66	PS / 1500 min <sup>-</sup>	1		-			<del>- , </del>	
750	45,5-47,5	760						

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C. Settings for Fuel Injection F	Pump with Fitted Governor
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engine p Full-load Controi-r Test oil te	delivery	Rotational-speed limitation	Fuel deliv	ery characteristics	Starting Idle switchir	fuel delivery	Intermed rotationa Torque- travel	speed
rev/min	cm <sup>3</sup> 71000 strokes	rev/min	rev/min	cm <sup>S</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes		mm
1	2	3	4	5	6	7	8	-
F 33	PS / 2800 min-	<u>1</u>	·					
1400	51,5-53,5	1420	800	46,0-49,0				
F 32	PS / 2500 min-	1					<u> </u>	
1250	52,5-54,5	1270	800	46,0-49,0				
	PS / 2500 min <sup>-</sup>							
1250	49,5-51,5	1270	800	44,0-47,0				
A 28	PS / 2500 min-	<u>1</u>	:					
1250	49,5-51,5	1270						
F 30	PS / 2300 min	1						
1150	48,5-50,5	1170	800	46,0-49,0				
B 28,	5 PS / 2300 mi	n-1						
1150	45,5-47,5	1170	800	44,0-47,0				
A 26	PS / 2300 min-	1						
1150	45,5-47,5	1170						
F 26	PS / 2000 min-	1						
1000	43,5-45,5	1010	800	46,0-49,0				
B 25	PS / 2000 min-	1						
1000	41,5-43,5	1010	800	44,0-47,0				·
A 23	PS / 2000 min	1						
1000	41,5-43,5	1010						
A 21	PS / 1800 min	1						
900	41,5-43,5	910						
A 17	PS / 1500 min-	1						
750	39,5-41,5	760						

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engine p Full-load o Control-re Test oil te	delivery	Rotational-speed limitation	Fuel deliv	rery characteristics	Idle	fuel delivery ng point	intermed rotationa Torque- travel	I speed
rev/min		rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
<u>'</u>	<del></del>	3	<b></b>	5	10	r	<del> </del>	<del> </del>
F 50 I	PS / 2800 min <sup>-1</sup>	. 4400	000	46 0 40 0				
1400	48,5-50,5	1420	800	46,0-49,0				
F 48,	5 PS / 2500 min	-1						
1250	50,5-52,5	1270	800	46,0-49,0				
B 46,	5 PS / 2500 min	-1						
1250	47,5-49,5	1270	800	43,0-46,0				
A 42 1	PS / 2500 min-1							
1250	47,5-49,5	1270						
F 46 I	PS / 2300 min-1							
1150	47,5-49,5	1170	800	46,0-49,0				
B 44 I	PS / 2300 min <sup>-1</sup>							
1150	45,5-47,5	1170	800	43,0-46,0				
A 40 I	PS / 2300 min-1							
1150	45,5-47,5	1170						
F 40 I	PS / 2000 min-1							<del></del>
1000	44,5-46,5	1010	800	46,0-49,0				
B 38,	5 PS / 2000 min	-1						
1000	42,5-44,5	1010	800	43,0-46,0				
A 35 I	PS / 2000 min-1							
1000	42,5-44,5	1010						
A 31,5	5 PS / 1800 min	-1						
900	40,5-42,5	910						
A 26 F	PS / 1500 min-1							<del></del>
750	39,5-41,5	760						

O. O.	ettings for Ft	iei mijection	Pulli	h Mirii Lirre	ad advernor	
Control-	power 3 delivery rod stop temp 40°C (104°F)	Rotational-speed imitation	Fuel delin	very characteristics	Starting fuel delivery lidle switching geent	intermediate rotational speed Torque-control
rev/min	cm <sup>3</sup> 71000 strokes	rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min cm³/1000 strokes 6 7	rey/min mm 8
F 68	PS / 2800 min-	1	1	!		7 7
1400	49,5-51,5	1420	800	46,0-49,0		
F 66	PS / 2500 min	1	<del></del>			
1250	50,5-52,5	1270	800	46,0-49,0		
B 63	PS / 2500 min	1				-
1250	47,5-49,5	1270	800	44,0-47,0		
A 57,	5 PS / 2500 mi	n-1	<del></del>			
1250	47,5-49,5	1270				
F 61	PS / 2300 min-	1		<del></del>		
1150	47,5-49,5	1170	800	46,0-49,0		
B 58,	5 PS / 2300 mi	n-1				<del></del>
1150	45,5-47,5	1170	800	44,0-47,0		
A 53,	5 PS / 2300 mi	n -1				
1150	45,5-47,5	1170				
F 53	PS / 2000 min	1				
1000	43,5-45,5	1010	800	46,0-49,0		
B 51	PS / 2000 min <sup>-</sup>	1	<del>'</del>		·	
1000	41,5-43,5	1010	800	44,0-47,0		·
A 46,	5 PS / 2000 min	<sub>1</sub> -1				
1000	41,5-43,5	1010				
A 42	PS / 1800 min <sup>-1</sup>		<del></del>	<del></del>		
900	40,5-42,5	910				
A 35	PS / 1500 min <sup>-1</sup>		· · · · · · · · · · · · · · · · · · ·			
750	39,5-41,5	760				
				<del></del>		<del></del>

0

ngine po ull-load control-ro est oil te	delivery	Rotational-speed limitation	Fuel deliv	ery characteristics	idie	fuel delivery ng point	Intermed rotationa Torque- travel	speed
ev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	1	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	<del> </del>
F 102	PS / 2800 min	·1						
1400	49,5-51,5	1420	800	46,0-49,0				
F 99 F	S / 2500 min-1				——————————————————————————————————————		<del></del>	
1250	50,5-52,5	1270	800	46,0-49,0				
B 95 F	S / 2500 min-1		····					<del></del>
1250	47,5-49,5	1270	800	44,0-47,0				
A 86 F	S / 2500 min 1			······································			<del></del>	
1250	47,5-49,5	1270						
F 92 F	S / 2300 min <sup>-1</sup>				***************************************			<del></del>
1150	47,5-49,5	1170	800	46,0-49,0				
B 88 F	S / 2300 min <sup>-1</sup>	_			<del></del>		· · · · · · · · · · · · · · · · · · ·	-
1150	45,5-47,5	1170	800	44,0-47,0				
A 80 F	S / 2300 min <sup>-1</sup>					<del></del>		
1150	45,5-47,5	1170						
F 80 P	S / 2000 min-1							•
1000	43,5-45,5	1010	800	46,0-49,0				
	S / 2000 min-1							
1000	41,5-43,5	1010	800	44,0-47,0				
A 70 P	S / 2000 min-1				*			
1000	41,5-43,5	1010						
A 63 P	S / 1800 min <sup>-1</sup>			· · · · · · · · · · · · · · · · · · ·				***************************************
900	40,5-42,5	910						
A 52,5	PS / 1500 mir	1-1		,				<del></del>
750	39,5-41,5	760						

0

engine ro Full-load o Control-ro Test oil ter	lelivery	Rotational-speed limitation	Fuel deliv	ery characteristics	Starting Idle switching	fuel delivery	Intermed rotationa Torque- travel	speed
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes		lww
1	2	3	4	5	6	7	8	
B 48 F	os / 3000 min-	<u>1</u>	·					
1500	47,0-49,0	1520	800	49,5-52,5				
A 43,5	PS / 3000 mi	n-1						
1500	44,0-46,0	1520						
F 55 F	PS / 2800 min <sup>-</sup>	1						
1400	53,5-55,5	1420	800	52,5-55,5				
F 53 F	S / 2500 min	<u>1</u>						
1250	55,5-57,5	1270	800	52,5-55,5				
B 50 P	S / 2500 min	1						
1250	52,5-54,5	1270	800	49,5-52,5				
A 46,5	/ 2500 min <sup>-1</sup>							
1250	48,0-50,0	1270						
F 50 P	S / 2300 min-	]	<del></del>					<del></del>
1150	56,0-58,0	1170	800	51,0-54,0				
B 48,5	PS / 2300 min	<sub>1</sub> -1	· · · · · · · · · · · · · · · · · · ·					
1150	51,5-53,5	1170	800	49,5-52,5				
A 44 P	S / 2300 min <sup>-</sup>		<del></del>		# <del>************************************</del>			•
1150	47,0-49,0	1170						
F 46 P	S / 2000 min <sup>-1</sup>	<u> </u>						
1000	54,0-56,0	1010	750	52,5-55,5				
B 44 P	S / 2000 min <sup>-</sup> 1		-					
1000	50,5-52,5	1010	750	50,0-53,0				
A 40 P	S / 2000 min-1							
1000	46,0-48,0	1010						•
***************************************				<del></del>				

engine pr Full-load of Control-ro Test oil te	delivery	Rotational-speed limitation	Fuel deli	very characteristics	Starting Idle switchir	fuel delivery	intermed rotationa Torque-	speed
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>9</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	travel rev/min	լաա
1	2	3	4	5	6	7	8	

B 40 PS / 1800 min-1

900 49,5-51,5

910

750

50,0-53,0

A 36,5 PS / 1800 min<sup>-1</sup>

900 45,0-47,0

910

B 33,5 PS / 1500 min<sup>-1</sup>

750 47,5-49,5

760

A 30,5 PS / 1500 min<sup>-1</sup>

·750 43,5-45,5

760

En 620

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel deliv	1		fuel delivery	Intermediate rotational speed Torque-control travel		
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes		t mm	
1	2	3	4	5	6	7	8		
B 64 P	S / 3000 min <sup>-1</sup>	<u>i</u>	•	•					
1500	47,5-49,5	1520	800	49,0-52,0					
A 58 P	S / 3000 min <sup>-1</sup>								
1500	44,0-46,0	1520							
F 74 P	S / 2800 min <sup>-</sup>								
1400	53,5-55,5	1420	800	52,0-55,0					
F 70,5	PS / 2500 mi	n=1							
1250	52,5-54,5	1270	800	52,0-55,0					
B 67 P	S / 2500 min	1					<del></del>		
1250	49,0-51,0	1270	800	49,0-52,0					
A 61 P	S / 2500 min-	1							
1250	44,5-46,5	1270							
F 67 P	S / 2300 min-	1							
1150	51,5-53,5	1170	800	52,0-55,0					
B 64,5	S PS / 2300 mi	<sub>n</sub> -1							
1150	49,0-51,0	1170	800	49,0-52,0					
A 58,5	PS / 2300 mi	n <sup>-1</sup>							
1150	44,5-46,5	1170							
F 61 P	S / 2000 min	1							
1000	50,0-52,0	1010	750	49,5-52,5					
B 58,5	PS / 2000 mi	n-1							
1000	48,0-50,0	1010	750	49,5-52,5					
A 53 P	S / 2000 min-	1							
1000	44,0-46,0	1010							

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		intermediate rotational speed Torque-control travel	
rev/min	cm <sup>3</sup> 1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	<u> </u>
900 A 49 P	47,0-49,0 S / 1800 min <sup>-</sup>	910	750 	49,5-52,5				
900	43,0-45,0	910						
3 44,5	PS / 1500 mi	<u>n-1</u>						
750	47,0-49,0	760						
A 41 P	S / 1500 min-	1						

760

43,0-45,0

760

Tev/min   Cm <sup>3</sup> 1000 strokes   Tev/min   Cm <sup>3</sup> 1000 strokes   Tev/min   Cm <sup>3</sup> 1000 strokes   Tev/min   Cm <sup>3</sup> 1000 strokes   Tev/min   Cm <sup>3</sup> 1000 strokes   Tev/min   Cm <sup>3</sup> 1000 strokes   Tev/min   Cm <sup>3</sup> 1000 strokes   Tev/min   Cm <sup>3</sup> 1000 strokes   Tev/min   Cm <sup>3</sup> 1000 strokes   Tev/min   Cm <sup>3</sup> 1000 strokes   Tev/min   Cm <sup>3</sup> 1000 strokes   Tev/min   Cm <sup>3</sup> 1000 strokes   Tev/min   Cm <sup>3</sup> 1000 strokes   Tev/min   Cm <sup>3</sup> 1000 strokes   Tev/min   Cm <sup>3</sup> 1000 strokes   Tev/min   Cm <sup>3</sup> 1000 strokes   Tev/min   Cm <sup>3</sup> 1000 strokes   Tev/min   Cm <sup>3</sup> 1000 strokes   Tev/min   Cm <sup>3</sup> 1000 strokes   Tev/min   Cm <sup>3</sup> 1000 strokes   Tev/min   Cm <sup>3</sup> 1000 strokes   Tev/min   Cm <sup>3</sup> 1000 strokes   Tev/min   Cm <sup>3</sup> 1000 strokes   Tev/min   Cm <sup>3</sup> 1000 strokes   Tev/min   Cm <sup>3</sup> 1000 strokes   Tev/min   Cm <sup>3</sup> 1000 strokes   Tev/min   Cm <sup>3</sup> 1000 strokes   Tev/min   Cm <sup>3</sup> 1000 strokes   Tev/min   Cm <sup>3</sup> 1000 strokes   Tev/min   Cm <sup>3</sup> 1000 strokes   Tev/min   Tev/min   Tev/min   Cm <sup>3</sup> 1000 strokes   Tev/min   Tev/min   Tev/min   Cm <sup>3</sup> 1000 strokes   Tev/min   engine po Full-toad o Control-ro Test oil tei	lelivery	Rotational-speed limitation	Fuel delin	very characteristics	Starting Idle switchin	fuel delivery	intermed rotationa Torque- travel	speed	
B 96 PS / 3000 min <sup>-1</sup> 1500 51,5-53,5 1520 800 50,0-53,0  A 87 PS / 3000 min <sup>-1</sup> 1500 47,5-49,5 1520  F 112 PS / 2800 min <sup>-1</sup> 1400 58,0-60,0 1420 800 53,0-56,0  F 106 PS / 2500 min <sup>-1</sup> 1250 57,5-59,5 1270 800 53,0-56,0  B 101 PS / 2500 min <sup>-1</sup> 1250 54,0-56,0 1270 800 50,0-53,0  A 92 PS / 2500 min <sup>-1</sup> 1250 49,0-51,0 1270  F 101 PS / 2300 min <sup>-1</sup> 1150 57,5-59,5 1170 800 53,0-56,0  B 97 PS / 2300 min <sup>-1</sup> 1150 55,0-57,0 1170 800 50,0-53,0  A 88 PS / 2300 min <sup>-1</sup> 1150 50,0-52,0 1170  F 92 PS / 2000 min <sup>-1</sup> 1150 50,0-52,0 1170  F 92 PS / 2000 min <sup>-1</sup> 1000 52,5-54,5 1010 750 50,0-53,0  B 88 PS / 2000 min <sup>-1</sup>	rev/min	cm <sup>3</sup> 1000 strokes		rev/min	1		•		mm .
1500 51,5-53,5 1520 800 50,0-53,0  A 87 PS / 3000 min <sup>-1</sup> 1500 47,5-49,5 1520  F 112 PS / 2800 min <sup>-1</sup> 1400 58,0-60,0 1420 800 53,0-56,0  F 106 PS / 2500 min <sup>-1</sup> 1250 57,5-59,5 1270 800 53,0-56,0  B 101 PS / 2500 min <sup>-1</sup> 1250 54,0-56,0 1270 800 50,0-53,0  A 92 PS / 2500 min <sup>-1</sup> 1250 49,0-51,0 1270  F 101 PS / 2300 min <sup>-1</sup> 1150 57,5-59,5 1170 800 53,0-56,0  B 97 PS / 2300 min <sup>-1</sup> 1150 55,0-57,0 1170 800 50,0-53,0  A 88 PS / 2300 min <sup>-1</sup> 1150 50,0-52,0 1170  F 92 PS / 2000 min <sup>-1</sup> 1100 52,5-54,5 1010 750 50,0-53,0  B 88 PS / 2000 min <sup>-1</sup>	1	1	3	14	5	6	7	8	
A 87 PS / 3000 min <sup>-1</sup> 1500 47,5-49,5 1520  F 112 PS / 2800 min <sup>-1</sup> 1400 58,0-60,0 1420 800 53,0-56,0  F 106 PS / 2500 min <sup>-1</sup> 1250 57,5-59,5 1270 800 53,0-56,0  B 101 PS / 2500 min <sup>-1</sup> 1250 54,0-56,0 1270 800 50,0-53,0  A 92 PS / 2500 min <sup>-1</sup> 1250 49,0-51,0 1270  F 101 PS / 2300 min <sup>-1</sup> 1150 57,5-59,5 1170 800 53,0-56,0  B 97 PS / 2300 min <sup>-1</sup> 1150 55,0-57,0 1170 800 50,0-53,0  A 88 PS / 2300 min <sup>-1</sup> 1150 50,0-52,0 1170  F 92 PS / 2000 min <sup>-1</sup> 11000 52,5-54,5 1010 750 50,0-53,0		S / 3000 min	 -						
1500 47,5-49,5 1520  F 112 PS / 2800 min-1 1400 58,0-60,0 1420 800 53,0-56,0  F 106 PS / 2500 min-1 1250 57,5-59,5 1270 800 53,0-56,0  B 101 PS / 2500 min-1 1250 54,0-56,0 1270 800 50,0-53,0  A 92 PS / 2500 min-1 1250 49,0-51,0 1270  F 101 PS / 2300 min-1 1150 57,5-59,5 1170 800 53,0-56,0  B 97 PS / 2300 min-1 1150 55,0-57,0 1170 800 50,0-53,0  A 88 PS / 2300 min-1 1150 50,0-52,0 1170  F 92 PS / 2000 min-1 1000 52,5-54,5 1010 750 50,0-53,0	1500	51,5-53,5	1520	800	50,0-53,0				
F 112 PS / 2800 min <sup>-1</sup> 1400 58,0-60,0 1420 800 53,0-56,0  F 106 PS / 2500 min <sup>-1</sup> 1250 57,5-59,5 1270 800 53,0-56,0  B 101 PS / 2500 min <sup>-1</sup> 1250 54,0-56,0 1270 800 50,0-53,0  A 92 PS / 2500 min <sup>-1</sup> 1250 49,0-51,0 1270  F 101 PS / 2300 min <sup>-1</sup> 1150 57,5-59,5 1170 800 53,0-56,0  B 97 PS / 2300 min <sup>-1</sup> 1150 55,0-57,0 1170 800 50,0-53,0  A 88 PS / 2300 min <sup>-1</sup> 1150 50,0-52,0 1170  F 92 PS / 2000 min <sup>-1</sup> 1000 52,5-54,5 1010 750 50,0-53,0	A 87 P	S / 3000 min-	<u>1</u>				•		
1400 58,0-60,0 1420 800 53,0-56,0  F 106 PS / 2500 min <sup>-1</sup> 1250 57,5-59,5 1270 800 53,0-56,0  B 101 PS / 2500 min <sup>-1</sup> 1250 54,0-56,0 1270 800 50,0-53,0  A 92 PS / 2500 min <sup>-1</sup> 1250 49,0-51,0 1270  F 101 PS / 2300 min <sup>-1</sup> 1150 57,5-59,5 1170 800 53,0-56,0  B 97 PS / 2300 min <sup>-1</sup> 1150 55,0-57,0 1170 800 50,0-53,0  A 88 PS / 2300 min <sup>-1</sup> 1150 50,0-52,0 1170  F 92 PS / 2000 min <sup>-1</sup> 1000 52,5-54,5 1010 750 50,0-53,0  B 88 PS / 2000 min <sup>-1</sup>	1500	47,5-49,5	1520						
F 106 PS / 2500 min <sup>-1</sup> 1250 57,5-59,5 1270 800 53,0-56,0  B 101 PS / 2500 min <sup>-1</sup> 1250 54,0-56,0 1270 800 50,0-53,0  A 92 PS / 2500 min <sup>-1</sup> 1250 49,0-51,0 1270  F 101 PS / 2300 min <sup>-1</sup> 1150 57,5-59,5 1170 800 53,0-56,0  B 97 PS / 2300 min <sup>-1</sup> 1150 55,0-57,0 1170 800 50,0-53,0  A 88 PS / 2300 min <sup>-1</sup> 1150 50,0-52,0 1170  F 92 PS / 2000 min <sup>-1</sup> 1100 52,5-54,5 1010 750 50,0-53,0  B 88 PS / 2000 min <sup>-1</sup>	F 112	PS / 2800 min	-1			·			
1250 57,5-59,5 1270 800 53,0-56,0  B 101 PS / 2500 min <sup>-1</sup> 1250 54,0-56,0 1270 800 50,0-53,0  A 92 PS / 2500 min <sup>-1</sup> 1250 49,0-51,0 1270  F 101 PS / 2300 min <sup>-1</sup> 1150 57,5-59,5 1170 800 53,0-56,0  B 97 PS / 2300 min <sup>-1</sup> 1150 55,0-57,0 1170 800 50,0-53,0  A 88 PS / 2300 min <sup>-1</sup> 1150 50,0-52,0 1170  F 92 PS / 2000 min <sup>-1</sup> 1000 52,5-54,5 1010 750 50,0-53,0  B 88 PS / 2000 min <sup>-1</sup>	1400	58,0-60,0	1420	800	53,0-56,0		,		
B 101 PS / 2500 min <sup>-1</sup> 1250 54,0-56,0 1270 800 50,0-53,0  A 92 PS / 2500 min <sup>-1</sup> 1250 49,0-51,0 1270  F 101 PS / 2300 min <sup>-1</sup> 1150 57,5-59,5 1170 800 53,0-56,0  B 97 PS / 2300 min <sup>-1</sup> 1150 55,0-57,0 1170 800 50,0-53,0  A 88 PS / 2300 min <sup>-1</sup> 1150 50,0-52,0 1170  F 92 PS / 2000 min <sup>-1</sup> 1000 52,5-54,5 1010 750 50,0-53,0  B 88 PS / 2000 min <sup>-1</sup>	F 106	PS / 2500 min	-1						
1250 54,0-56,0 1270 800 50,0-53,0  A 92 PS / 2500 min <sup>-1</sup> 1250 49,0-51,0 1270  F 101 PS / 2300 min <sup>-1</sup> 1150 57,5-59,5 1170 800 53,0-56,0  B 97 PS / 2300 min <sup>-1</sup> 1150 55,0-57,0 1170 800 50,0-53,0  A 88 PS / 2300 min <sup>-1</sup> 1150 50,0-52,0 1170  F 92 PS / 2000 min <sup>-1</sup> 1000 52,5-54,5 1010 750 50,0-53,0  B 88 PS / 2000 min <sup>-1</sup>	1250	57,5-59,5	1270	800	53,0-56,0				
A 92 PS / 2500 min <sup>-1</sup> 1250 49,0-51,0 1270  F 101 PS / 2300 min <sup>-1</sup> 1150 57,5-59,5 1170 800 53,0-56,0  B 97 PS / 2300 min <sup>-1</sup> 1150 55,0-57,0 1170 800 50,0-53,0  A 88 PS / 2300 min <sup>-1</sup> 1150 50,0-52,0 1170  F 92 PS / 2000 min <sup>-1</sup> 1000 52,5-54,5 1010 750 50,0-53,0  B 88 PS / 2000 min <sup>-1</sup>	B 101	PS / 2500 min	-1						
1250 49,0-51,0 1270  F 101 PS / 2300 min <sup>-1</sup> 1150 57,5-59,5 1170 800 53,0-56,0  B 97 PS / 2300 min <sup>-1</sup> 1150 55,0-57,0 1170 800 50,0-53,0  A 88 PS / 2300 min <sup>-1</sup> 1150 50,0-52,0 1170  F 92 PS / 2000 min <sup>-1</sup> 1000 52,5-54,5 1010 750 50,0-53,0  B 88 PS / 2000 min <sup>-1</sup>	1250	54,0-56,0	1270	800	50,0-53,0				
F 101 PS / 2300 min <sup>-1</sup> 1150 57,5-59,5 1170 800 53,0-56,0  B 97 PS / 2300 min <sup>-1</sup> 1150 55,0-57,0 1170 800 50,0-53,0  A 88 PS / 2300 min <sup>-1</sup> 1150 50,0-52,0 1170  F 92 PS / 2000 min <sup>-1</sup> 1000 52,5-54,5 1010 750 50,0-53,0  B 88 PS / 2000 min <sup>-1</sup>	A 92 P	S / 2500 min <sup>-</sup>	1						
1150 57,5-59,5 1170 800 53,0-56,0  B 97 PS / 2300 min-1  1150 55,0-57,0 1170 800 50,0-53,0  A 88 PS / 2300 min-1  1150 50,0-52,0 1170  F 92 PS / 2000 min-1  1000 52,5-54,5 1010 750 50,0-53,0  B 88 PS / 2000 min-1	1250	49,0-51,0	1270						
1150 57,5-59,5 1170 800 53,0-56,0  B 97 PS / 2300 min-1  1150 55,0-57,0 1170 800 50,0-53,0  A 88 PS / 2300 min-1  1150 50,0-52,0 1170  F 92 PS / 2000 min-1  1000 52,5-54,5 1010 750 50,0-53,0  B 88 PS / 2000 min-1	F 101	PS / 2300 min	-1	·					
1150 55,0-57,0 1170 800 50,0-53,0  A 88 PS / 2300 min <sup>-1</sup> 1150 50,0-52,0 1170  F 92 PS / 2000 min <sup>-1</sup> 1000 52,5-54,5 1010 750 50,0-53,0  B 88 PS / 2000 min <sup>-1</sup>				800	53,0-56,0				
A 88 PS / 2300 min <sup>-1</sup> 1150 50,0-52,0 1170  F 92 PS / 2000 min <sup>-1</sup> 1000 52,5-54,5 1010 750 50,0-53,0  B 88 PS / 2000 min <sup>-1</sup>	B 97 P	S / 2300 min-	1						
1150 50,0-52,0 1170  F 92 PS / 2000 min <sup>-1</sup> 1000 52,5-54,5 1010 750 50,0-53,0  B 88 PS / 2000 min <sup>-1</sup>	1150	55,0-57,0	1170	800	50,0-53,0				
F 92 PS / 2000 min <sup>-1</sup> 1000 52,5-54,5 1010 750 50,0-53,0  B 88 PS / 2000 min <sup>-1</sup>	A 88 P	S / 2300 min <sup>-</sup>	l						
1000 52,5-54,5 1010 750 50,0-53,0  B 88 PS / 2000 min <sup>-1</sup>	1150	50,0-52,0	1170						•
B 88 PS / 2000 min <sup>-1</sup>	F 92 P	S / 2000 min <sup>-</sup>	1						
	1000	52,5-54,5	1010	750	50,0-53,0				
1000 50 0-52 0 1010 750 50 0-52 0	B 88 P	S / 2000 min <sup>-</sup>	1						
1000 50,0-52,0 1010 750 50,0-55,0	1000	50,0-52,0	1010	750	50,0-53,0				
A 80 PS / 2000 min-1	A 80 P	S / 2000 min <sup>-</sup>	1						
1000 45,5-47,5 1010	1000	45,5-47,5	1010						

0

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed Fuel deligible function		very characteristics	Starting Idle switchir	fuel delivery	Intermediate rotational speed Torque-control travel	
rev/miก	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes		mm
1	2	3	4	5	6	7	8	
B 80	PS / 1800 min-	<u>i</u>	•		•		•	•
900	50,0-52,0	910	750	50,0-53,0				
						· · · · · · · · · · · · · · · · · · ·		
A 73	PS / 1800 min-	<u>1</u>						
900	45,5-47,5	910						
B 67	PS / 1500 min <sup>-</sup>	1						
750	50,0-52,0	 760	650	52,0-55,0				
A 61	PS / 1500 min-	1	,					

estoil-ISO 4113

WPP 001/4 5,7 v 2

2. Edition

PES 6A 90D 410PS 2596

ROV300-1400 AB1066-1DL

supersedes 4.80

1 - 5 - 3 - 6 - 2 - 4

company:

Daimler-Benz

engine:

OM 352 A

 $0 -60 -120 -180 -240 -300 \pm 0,50 (0,75)$ 

125 kW(171 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings (1,95-2,15)
Port closing at prestroke 2,00-2,10 mm

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference crn <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	13,1+0,1	7,2 - 7,3	0,3(4,5)			
300	8,9-9,1	1,1 - 1,7	0,2(0,4)			
500/500	-	C, Sp.4-5	0,4(0,55)			
	•					

Adjust the fuel delivery from each outlet according to the values in [

#### **B. Governor Settings**

Upper rated :	speed			intermediate	rated sp	ed	Lower rated	speed	1	Stiding s	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min 3	(a) (2a)	Degree of deffection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3	rev/min 10	mm 11
ca.68	1400 1800	15,2-17 0 -		-	-	-	ca.16	100 300 740-	min.10,5 8,9-9,1 800=2,0		1,2 2,5-2,7 8,6
ca.62	12,1	440-145  595-162					400-470				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten rev/min	d stop np. 40°C (104°F) 2	Rotational-speed ②D limitation intermediate speed rev/min 3	high idle s	cm³/1000 strokes	Starting Idie switchir rev/min 6	0	Torque- travel rev/min 8	Control od travel mm 9 +0,2
LDA 1400	0,7 bar 72,5-73,5 (72,5-75,5)	1440-1450*	LDA 500 LDA 500	0,7 bar 72,5-74,5 (70,5-76,5) 0 bar 58,0-60,5 (56,0-62,0)	100	72,25-82,25 100-220 (80-240)	1400 1225 1050 500	13,1 13,4 14,0 14,3

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Test at n =

rev/min decreasing pressure - in bar gauge pressure

MB 5,7 v 2

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Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure =	bar Gauge pressure =	bar mm (1)
2596 with 1066-1DL	0,7	0,35 0,225 0	14,3 - 14,4 14,0 - 14,1 13,4 - 13,6 13,0 - 13,1

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps (2) and Governors

40

WPP 001/4 DAF 6,2 k

4. Edition

Εn

PE 6 A 85 D 320 RS 2546 2546Z.

RQ 250/1300 AB 1023 R EP/RSV 250-1300 A 5 B 2025 R supersedes

2.79 DAF

company: engine:

DF 615

See Service Information VDT-I-DAF 004

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,15-2,25 RW 9 (2,10-2,30)

mm (from BDC)

Rotational speed rev/min	Control rod travel • mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,2	5,4 - 5,6	0,3(0,45)			
250	+0,1 7,3-7,7	1,4 - 1,9	0,2(0,4)			
Port closin	g differ	ence between c	ontrol-rod	travel 9	mm and max. 3	3.0 - 4.0° camsha

**B.** Governor Settings

Checkin PAG che rev/min 1	Control rod travel	Full-load s Setting po rev/min 3	•	-	rev/min		Control rod travel		cifications 5 Control rod travel mm	rev/min	Control rod (3)
550	19,6-20,4	550	20,0		1345-1360 1425-1455	250	6,5	100 250 300-	min.8,0 6,4-6,6	-	-
1300	Breakway	VH ca	.49°					400	0 - 1		
1550	0 - 1										

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

	lelivery on control lever np. 40°C (104°F)	2 Control rod stop	(3a) Fu	el delivery chara	cteristics (3b)	Starting f	uel delivery d 6
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev	v/min cm³/-10	00 strokes	rev/min 6	cm <sup>3</sup> /1000 strokes:/ mm
1000	55,0 - 56,0 (53,0 - 58,0)					100	19 - 21

Checking values in brackets

11.79

#### **B.** Governor Settings

EP/RSV..2025 R

Degree of deflection of control lever	r rated speed Control rod travel mm		Intermed	diate rated	speed	Control- lever deflection in degrees 7		rated speed Control rod travel mm	3 To	rque control Control rod travel mm
loose	800	0,3-1,0				ca.21	230	5,5		± 0,1
	X =	4,0	İ			_	100	min.19	1000	10,2
ca.67	9,2 4,0 1550	1340-1350 1355-1385 0,3 - 1,7					250 310-370 500	5,9-6,1 = 2,0 0 - 1	500 250	10,3 10,6

# C. Settings for Fuel Injection Pump with Fitted Governor

9	ill-load stop	6 Rotational- speed limitat.	Sa Fuel delivery characteristics		Starting f	Starting fuel delivery 5		4a Idle stop	
rev/min	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm³/1000 strokes 7	rev/min 8	Control rod travel mm	
1000	55,0-56,0 (53,0-58,0)	1340-1350*							
"Z" 1000	49,0-50,0 (46,9-52,0)	1240-1250*							

Checking values in brackets

Festoil-ISO 4113

\* 1 mm less control rod travel than col. 2

### **B.** Governor Settings

Degree of deflection of control lever	r rated speed Control rod travel mm		Intermed	liate rated	speed 6	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed Control rod travel mm	rque control Control rod travel mm
		•							
29									

# C. Settings for Fuel Injection Pump with Fitted Governor

	emp. 40°C (104°F) cm <sup>2</sup> /1000 strokes	Rotational- speed limitat. Note: changed to) rev/min	3a Fu	el delivery eracteristics cm³/1000 strokes	rev/min	uel delivery 5 cm³/1000 strokes	rev/min	e stop Control rod travel mm
•	2	3	•	5	6		8	9
				•				•

Checking values in brackets En

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

PES 6 A 90 D 410 RS 2520

RQV 300-1425 AB 982 DL

10.77 supersedes

Daimler Benz

engine:

OM 352 A (172 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings
1,80-1,90
(1,75-1,95)
mm mm (from BDC)

		1./5-1.95)				
Rotational speed rev/min 1	Control rod traval mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,5	7,9 - 8,0	0,3(0,45)			
300 800/600/500	+0,1 7,5-7,7 	0,9 - 1,5 C, 4 - 5	0,2(0,4) 0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated s	peed	1	Intermediate	rated sp	bed	Lower rated	speed		Slidina s	leeve travel
deflection	rev/min Control rod travel	Control rod ta	Degree of deflection of control		Control rod traval	Degree of deflection of control		Control rod travel		0
	mm	rev/min (28)	lever	rev/min	mm (4)	lever	rev/min	mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
	1425 1800	16,0-19,4 0 - 1	-	-	-	ca.10	100 300	min.7,4 5,8-6,0	400	1,4-2,2
ca.61	10,5 4,0	1440-1450 1560-1590					800	530 = 2,0 0 - 1	1425	8,1
						<u>3a</u>				

0,5 mm Torque controi travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed (2b) limitation intermediate speed	Fuel delic high idle :	rery characteristics 5e peed 5b	Starting Idle switchle	• •	Torque- travel	control (5)
rev/min	cm³/1000 strokes	rev/min 40	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
LDA 1400 800	0,7 bar 79,0-80,0 (77,0-82,0) 82,0-84,0 (80,0-86,0)	1440-1450*	LDA 600 LDA 500	0,7 bar 76,0-78,0 (74,0-80,0) 0 bar 62,0-65,0 (60,0-67,0)	100	14,0-14,6 mm RW	1400 1200 1000 600	11,5 11,8 12,1 12,6

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1.79

Test at n =

800

rev/min decreasing pressure - in bar gauge pressure

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Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
2520 with 982 DL	0,68		12,5 - 12,6
		0,18	12,2 - 12,3
		0,14	11,7 - 11,9
		0	11,5 - 11,6

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps 2 @ and Governors

WPP 001/4 MAN 7,2 f 3. Edition

PES	6 A 85 C 412	RS2104 RQ RS2139,Z RS2139,Z RS2139	250/1250 250/1250 250/1250 250/1250	AB569D AB598	(1) (2) (3)	supersedes company: engine:	HM70/71	(1) (2)
							HMN 70	(3)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings 1,50-1,60 Port closing at prestroke (1,45-1,65)

mm (from BDC)

		,43-1,00/				
Rotational speed rev/min	Control rod travei mm 2	Fuel delivery C cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm	Fuel delivery D cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	. 9	4,9 - 5,5	0,4	9	4,1 - 4,5	
	6 15	1,3 - 2,1 12,4 -13,1		6 -	0,6 - 1,4	
200	9	3,9 - 4,4		9	1,4 - 2,2	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

511D, 569D

Checking of slider PRG check Control rod travel rev/min	Full-load Setting p	speed re coint Central red travel mm	rev/min	 Control red travel	Test spe	cifications 5 Control rod travel mm	rev/min	Control rod travel mm
1200 14,0-14,8	1200	14,4	0 - 6,4	_	440 400 300 200 100	0 0 - 1,8 2,9-5,3	450 800 1100	15,7-16,6 15,0-15,4 14,4-14,7

Torque-control travel on flyweight assembly dimension a

0,5

1290 - 1305 = 1,5 Speed regulation: At

1 mm less control rod travel

(1)

#### C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on ontrol lever np. 40°C (104°F)	Control rod stop 3a	Fuel delive	ery characteristics	Starting for Idle spee	d Cantre
rev/min 1	cm <sup>3</sup> /-1000 strokes	rev/min	rev/min 4	cm <sup>3</sup> /~1000 strokes	rev/min 6	md travel cm <sup>3</sup> /1000 strokes;/ mm 7
(1) 1250	71,5 - 73,5		700	70,5 - 73,5	100	21 mm RW
(1-Z) 1250	73,5 - 75,5		700	72,5 - 75,5	250	( → 569D) 6,0 mm RW
(inrea	se by ± 1,0 cm³!	)				./.

Checking values in brackets

8.78

BOSCH

Testoil-ISO 4113

estoil-ISO 4113

### **B.** Governor Settings

PRG che	Control rod	Full-load s Setting po rev/min 3	•	•	rev/min	Idle spec Setting p rev/min 7	Control rod travel		Control rod travel mm	Torque o		3
600	15,7-16,3	600	16,0		15,8-16,0 10,0-14,6 1,6-10,0	560	0	200	6,2-8,1 5,5-7,5 3,5-5,5	-	-	

Torque-control travel on flyweight assembly dimension a =

Speed regulation At 1290-1305 = 1,5

1 mm less control rod travel

# C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics 3b	Starting f	guet delivery 6
rev/min	cm <sup>3</sup> /-1000 strokes 2	rev/min	rev/min 4	cm <sup>3</sup> /-1000 strokes	rev/min 6	rod travel cm <sup>3</sup> /1000 strokes / mm
(2) 1250	76,5-78,5		900	74,0 - 77,0	100	min. 19 mm RW
(2-z) 1250	75,5-77,5		900	73,0 - 76,0	250	6,0 mm RW
(inrea	se by ± 1,0 cm <sup>3</sup> !					

Checking values in brackets

### **B.** Governor Settings

64	5D	(	3	
		-	-	1

Checkin PRG che rev/min	g of slider cck Control rod travel mm		•	•	rev/min	Idle spec Setting p	Control rod travel	Test spe	cifications 5 Control rod travel	Torque d	Control rod (3) travel mm
600	15,7-16,3	600	16,0		14,*4-14,7 8,0-13,8 0 - 10 0	560	0	100 200 300 460	6,8-8,1 5,6-7,7 3,4-5,6	1000	15,8-16,0 15,3-15,6 14,7-15,0

Torque-control travel on flyweight assembly dimension a -

0,4

Speed regulation At 1290-1305 = 1,5

1 mm less control

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel deliv	ery characteristics	Starting fuel delivery Idle speed i Con		
rev/min	cm <sup>3</sup> /-1000 strokes 2	rev/min	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	rad travel cm <sup>3</sup> /1000 strokes / mm	
(3) 1250	72,0-74,0		800	74,5 - 77,5	100 250	21 mm RW 6,0 mm RW	
(incre	ase by ± 1,0 cm³	)					

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Testoil-ISO 4113

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Test Specifications
Fuel Injection Pumps ②
and Governors

40

WPP 001/4
3. Edition

Er

PES 4 A 80 D 410 RS2131

RQ 250/1250 AB902DL

RQ 250/1250 AB934DL ./.

supersedes 8,74 11.74

company: D COAA

engine: (Korea)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

1,5 + 0,1

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1900	9	3.1 - 3.5	0,4			
	6	0,1 - 0,6				
200	9	0,6 - 1,3				

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

RQ 250/1250 AB 902DL

Checkin		Full-load s			lation   Idle speed regulation   set specifications (5)   Setting point   Test specifications (5)					Torque control			
rev/min	Control rod travel mm	rev/min 3	control red travel rnm 4	Control rad travel mm 5	rev/min		Control rod travel rmm 8	rev/min 9	Control rod travel mm	rev/min 11	travel		
600	19,7-20,3	600	20,0		18,4-18,8 10,2-15,3	550	0	150 250	9,0-11,1 5,6- 9,8		19,8-20,0		
1300	Breakway	VH ca	.49°	1420 1530				350 450	1,5-4,0 0	1000	18,8-19,0		
Torque	control travel	L	0,3	}			L	L	<u> </u>		1 mm less control		

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

governor	Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	<u>3</u>	Fuel deliv	ery characteristics	<b>3</b> b	Starting f	uel delivery
rev/min 1	cm <sup>3</sup> /-1000 strokes 2		rev/min 3		rev/min 4	cm <sup>3</sup> /~1000 strokes 5		rev/min 6	cm <sup>3</sup> /1000 strokes:/ mm
20° 1230	59,0-61,0				800 500	60,0 - 63,0 max. 59,5		100	mind.20mm RW
40° 1230	57,5-59,5				800 500	57,5 - 60,5 max. 59,5		250	8 mm

Checking values in brackets

H13

**BOSCH** 

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
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Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

PRG che	Control rod	Full-load s Setting po rev/min 3	•	•	cifications (4)	idle spec Setting p rev/min 7	Control rod travel	Test spe	cifications 5 Control rod travel mm	rev/min	Control rod
600	15,7-16,3	600	16,0	1280 1350 1420 1520			0	150 250 350 450	6,2-8,1 4,5-6,8 1,8-4,1 0	700 1000	15,8-16,0 15,0-15,2

Torque-control travel on flyweight assembly dimension a =

0,3

Speed regulation At

1 mm less control rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever fest oil temp 40°C (104°F)		Control rod stop	Fuel deliv	ery characteristics	Starting f	
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min ර	Control rod travel cm <sup>3</sup> /1000 strokes / mm
See	page 1 !	The state of the s	e e-e-profe-uniskip ede istud-luvedamis			
			min-do-day and many departs a sample distance			

Checking values in brackets

### **B. Governor Settings**

Checkin PRG che	g of slider ck	Ontrol rod avel Setting point Control avel Test		-	cifications (4)	idle spec	_		cifications (5)	Torque control		
rev/min	Control rod travel mm	1 - "	rod travel	mm	rev/min	rev/min		rev/min		rev/min	travel	
1	2	3	4	5	6	/	8	9	10	11	12	
							İ					
								1				
			į							Ì		

Torque-control travel on flyweight assembly dimension a =

....

Speed regulation At

1 mm less control rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

Test oil te	control lever mp 40°C (104°F)	2) Control rod stop	3a Fuel deliv		<b>3b</b>	idle spee	Control
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	rev/min	cm <sup>3</sup> /-1000 strokes		rev/min	cm <sup>3</sup> /1000 strokes / mm
1	2	3	4	5		6	7
						ن ا	
						•	

and Governors

En

PE 6 A 95 D 410 RS2525, Y,X,

RQ 225/1200 AB1007L RSV 250-1200 A5 B 2013 DL

supersedes9,78

**DHR 825** 

Test LDA and cold start in accordance with Service Information

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

RW 9 mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes	Control rod travel mm 2 -	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,6	10,8 - 11,0	0,3(0,6)			
225	+0,1 5,7-5,9	0,7 - 0,9	0,3(0,5)			
600		C, 4-5	0,4(0,7)			
ort closing	differen	ce between cont	rol-rod t	ravel 9 m	n and max. 3,0	4,0° camshaft

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

RQ..1007 L

Checkin PRG che	Control rod travel mm rev/min 2 3		•	•	cifications (4)	Idle spe	-		cifications (5)	Torque control		
	travel		Control rod travel mm 4	Control red travel mm 5	rev/min 6		Control rod travel rnm 8	rev/min 9	Control rod		Control rod Travel	2
650	19,2-20,8	650	20,0	11,6	1230-1245	225	5,8		min.7,3 5,7-5,9	•	-	
1200	Breakway	VH.ca	.49°	4,0	1315-1345			340- 500	380=2,0 0 - 1			
1450	0 - 1											

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control rod travei

### C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	<b>3</b> b	Starting for	. •
rev/min	cm³/-1000 strokes	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes		rev/min 6	Control red travel cm <sup>3</sup> /1000 strokes;/ mm 7
LDA 1000 X 1000 Y	0,7 bar 106,5-108,5 (104,5-110,5) 90,5- 92,5	(12,0 mm RW)	LDA 600 600 600	0 bar 77,5-80;5 (75,5-82,5) 77,0-80,0 77,0-80,0			•/•
1000	90,0-101,0	(12,5 mm RW)		. ,			

Checking values in brackets

H15

The numbers denote the sequence of the tests

### **B.** Governor Settings

Degree of deflection of control lever 1	r rated speed Control rod travel mm		intermed	fiate rated	speed	Control- lever deflection in degraes 7	Lower rev/min 8	rated speed  Control rod  travel  mm	3 To	rque control  Control rod  travel  mm   11 +0,1
loose	800 x =	0,3-1,0 3,0				ca.23	250 100	6,3 min.19	1000 500	12,6 12,7
ca.50	11,6 4,0 1450	1230-1240 1315-1345 0,3- 1,7					250 380-440 500	6,7-6,9	300	13,0-13,3

### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop	speed limitat.	39 Fu	el delivery Paracteristics	Starting I	luel delivery 5	<b>43</b> Idi	4a Idie stop		
rev/min	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	4 ls l		rev/min	cm <sup>3</sup> /1 <b>000</b> strokes 7	rev/min 8	Control roo travel mm		
LDA 1000 X	0,7 bar 106,5-108,5 (104,5-110,5)	1230-1240*	LDA 600	0 bar 77,5-80,5 (75,5-82,5)	100	19-21mmRW				
1000	90,5- 92,5	(12,0 mmRW)	600	77,0-80,0						
1000	99,0-101,0	(12,5 mmRW)	600	77,0-80,0						

Checking values in brackets

\* 1 mm less control rod travel than col. 2

### D. Adjustment Test for Manifold Pressure Compensator

Test at n =

1200 rev/min decreasing pressure - in bar gauge pressure XXXXX

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
2525 with 1007L 2525 with 2013DL)	0,68		12,6 - 12,7
		0,27	12,2 - 12,3
		0,23	11,5 - 11,8
		0	11,2 - 11,3

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

En

WPP 001/4

2. Edition

supersedes

3.78 OM Brescia company:

engine:

8340.04

PES 4 A 90 D 410 RS 2518 RQ 300/1400 AB898DL .. RS 2518 RQV 300-1400 AB1018L

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	10,8	6,9 - 7,1	0,3(0,45)	10,8	6,9 - 7,1	
	+0,1			+0,1		
300	7,9-8,1	0,9 - 1,5	0,2(0,4)	7,9-8,1	0,9 - 1,5	
900/500		C, 4 - 5	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

RQ..989DL

	Hecking of slider RG check Control rod Full-load speed of Setting point Control		int			Idle speed regulation Setting point Test Control			tion Test specifications Control rod		control Control rod
rev/min 1	travel	rev/min 3	rod travel rnm 4	red travel mm 5	rev/min 6		rod travel mm 8	rev/min 9	travel	rev/min	travel
1000	14,8-15,6	1000	15,2		1445-1460	300	6,0	100 300	min.7,5 5,9-6,1	1400	+ 0,1
1400 1700				4,0	1540-1570	,		450- 600	490=2,0 0 - 1	740 600	10,9 11,1

Torque-control travel on flyweight assembly dimension a = 0.4

Speed regulation: At

1 mm less control rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	Starting f	tuel delivery
rev/min 1	cm³/~1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	 rev/min 6	rad trave cm³/1000 strokes;/ mm 7 mm RW
1400	69,5-70,5 (67,5-72,5)	500	900	64,5-67,5 (62,5-69,5)	100	16,2-16,6
			500	59,5-62,5 (57,5-64,5)		
						./.

Checking values in brackets

### **B.** Governor Settings

Upper rated s	peed		Intermediate	rated spe	ed	Lower rated	speed		Sliding	leeve travel
Degree of deflection of control	rev/min Control rodtravel	travel	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel	onding 3	1
lever	шш	rev/min (2a)	lever	rev/min	mm (4)	lever	rev/min	mm (3)	rev/min	mm
1	2	3	4	5	6	7	8 .	9	10	11
ca.68	1410 1650	15,0-18,3 0 - 1	-	-	-	ca.12	100 300	min.7,9 6,3-6,5	300	0,3-1,4
								760=2,0 0 - 1	1410	8,2
ca.66	9,8	1440-1450	ì	),			l			
	4,0	1500-1530	•			350.450			-	-

Torque control travel a =

mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil tem rev/min	1 stop ip 40°C (104°F) 2	Rotational-speed (2b) Imitation intermediate speed rev/m/n	Fuel deliv high idle s rev/min	peed 5b cm <sup>3</sup> /1000 strokes	Starting Idle switchin		Torque- travel	Control rod travel
1	2	3	4	5	6	7	8	9
1400	69,5-70,5 (67,5-72,5)	1440-1450 <b>*</b>			100 24 V	16,2-16,6 Electromagne		

Checking values in brackets

### **B.** Governor Settings

Upper rated s	peed			Intermediate	rated spe	ed	Lower rated	speed		Stiding	sleeve travel
deflection		Control rod travel	(ta)	Degree of deflection		Control rod travel	Degree of deflection	l	Control rod travel		1
	rod travel mm	rev/min	(2a)	of control lever	rev/min	mm 4	of control lever	rev/min	mm (3	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
							<b>3</b> a				

Torque control travel a =

en m

### C. Settings for Fuel Injection Pump with Fitted Governor

		Rotational-speed (2b) limitation intermediate speed (4a)		rery characteristics 5a speed 5b cm³/1000 strokes	switchir	fuel delivery 6 ng point cm³/1000 strokes	Torque- travel	Control rod travel
rev/min	2	3	rev/min 4	5	6	7	8	mm 9
								,
					<u> </u>			

Checking values in brackets

<sup>\* 1</sup> mm less control rod travel than col 2

### **Test Specifications** 2 Fuel Injection Pumps 2 and Governors

WPP 001/4 MAN 11,1 p 2 3. Edition

RO250/1100 AB 1049 DL (1) PES 6 A 95 D 410 LS 2541 250/1050 AB 1042 DL (2) 250/1050 AB 1042 DL (3) LS 2541 LS 2541Z

supersedes company:

1.80 MAN

engine:

D2566 MUH

(1) 161,8 kW(220 PS)

(2) 141,0 kW(192 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

(3) 129,0 kW(175 PS)

A. Fuel Injection Pump Settings

mm (from BDC)

Cy1. 6

estoil-ISO 4113

Control rod travel • mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) ram 6
11,2-11,3	11,4-11,6	0,3(0,6)	9,8-9,9	9,5-9,7	n= 1050 (2)
5,9-6,1 -	0,8- 1,4 C, 4-5	1	1	8,7-8,9 0,8-1,4	n= 1050 (3)
	mm 2 11,2-11,3	travel mm cm³/100 strokes 2 3  11,2-11,3 11,4-11,6  5,9-6,1 0,8-1,4	travel mm cm³/100 strokes 2 cm³/ 11,2-11,3 11,4-11,6 0,3(0,6) 5,9-6,1 0,8-1,4 0,3(0,5)	travel cm³/100 strokes cm³/ 100 strokes cm²/ 100 strokes	travel cm³/100 strokes 2 cm³/100 strokes 4 cm³/ 100 strokes 2 cm³/100 Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

(1)

PRG che	Checking of slider PRG check Control rod travel mm 1 2		Full-load speed regulation  Setting point Test specifications  Control rod travel rod travel rom rev/min  3 4 5 6			Idle speed regulation   Setting point   Control rod   Travel rev/min   mm   10   10   10   10   10   10   10				Control rod travel mm	
600 1100 1250	15,6-16,4 11,0-11,4 0 - 1	600	16	10,2 4,0	1145-1160 1185-1215		6,0	100 250		1100 845	11,2-11,3 11,2-11,5 11,4-11,6 11,6-11,7

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control rod travel

6.80

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d governor d Test oil ter	lelivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuei đặliv	ery characteristics 3b	Starting for	uel delivery d Control
εev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	red travel cm <sup>3</sup> /1000 strokes:/ mm 7
1100	112,5 - 114,5 (110,5 - 116,5)		700 500	102,5-105,5 (100,5-107,5) max. 106,5 (108,5)	100 250	124,0-134,0 6,0

Checking values in brackets

B. G	overnor S	(	(2)			MAN 11,	1 p 2	-2-			
Checkin PRG che rev/min	g of slider ck Control rod travel mm 2	Full-load Setting por rev/min 3	•	-	rev/min	Idle spe Setting rev/min 7	Control rod travel	Test spe	control rod travel mm	Torque o	Control rod (3) travel mm 12 +0,1
600 1050 1250	15,6-16,4 9,8-10,0 0 - 1	600	16,0	3,8 4,0	1095-1110 1165-1195	250	6,0	250 360-4	min.7,5 5,9-6,1 00 =2,0 0 - 1	1050 815 600	9,8 10,4 10,7

Torque-control travel on flyweight assembly dimension a =

0,4 mm

Speed regulation At

1 mm less control rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop	Fuel deliv	ery characteristics 3b	Starting fuel delivery ldle speed		
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	Control rad travel cm <sup>3</sup> /1000 strokes / mm	
(2) 1050	93,5 - 95,5 (91,5 - 97,5)		700 500	90,0 - 93,0 (88,0 - 95,0) max. 91,5 (93,5)	100 250	124,0 - 134,0 6,0 mm RW	

Checking values in brackets

### **B. Governor Settings**

(3)

1	g of slider	Full-load s	•	_		idie spe	•			Torque o	
PRG che	Control rod travel	Setting po	Control rod travel	Control rod travel rmm	rev/min	Setting r	Control rod travel	Test spe		rev/min	Control rod (3)
1	2	3	4	5	6	7	8	9	10	11	12 ±0,1
600	15,6-16,4	600	16,0	8,2	1095-1110 1160-1190	250	6,0	100 250	min.7,5 5,9-6,1	1050 815	9,2 9,9
1050	9,0-9,4				1100 1130				400 =2,0	0.0	3,3
1250	0 - 1							450	0 - 1	600	10,1

Torque-control travel on flyweight assembly dimension a = 0,4

Speed regulation At

1 mm less control

### C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	2	Control rod stop	Fuel deliv	ery characteristics	<u>3</u> b	Starting t	ruel delivery
rev/min 1	cm <sup>3</sup> /-1000 strokes 2		rev/min 3	rev/min	cm <sup>3</sup> /~1000 strokes 5		rev/min	cm <sup>2</sup> /1000 strokes / mm
(3) 1050	85,5-87,5 (83,5-89,5)			700 500	81,0-84,0 (79,0-86,0) max. 80,5 (82,5)		100 250	124,0-134,0 6,0 mm RW
					(02,0)			

② Test Specifications Fuel Injection Pumps ② and Governors 40

WPP 001/4 DAF 6,2 1

1. Edition

En

supersedes

PE 6 A 85 D 320 RS2546

RQ 250/1200 AB 1023R RSV250-900 A7 B2061R company:

DAF

engine:

D D 615

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

2,15-2,25

mm (from BDC)

	12.	10-2.30)			 
	travel *	Fuel delivery cm <sup>3</sup> /100 strokes 3	cm³/	Control rod travel mm 2	Spring pre-tensioning (torque-control valve) mm 6
1000	9,5-9,6	4,8 - 5,0	0,3(0,45)		
250	5,9-6,1	0,9 - 1,5	0,2 (0,4)		
	:				

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

RQ.. 1023 R

Checkin		Full-load s Setting po	int	Test spec	cifications (4)	Idle speed regulation   Setting point   Test specifications   Control rod				Torque control		
rev/min	Control rod travel mm	rev/min 3	Control rod travel rnm 4	Control red travel mm 5	rev/min	rev/min 7	Control rod travel mm 8	rev/min 9	travel mm	rev/min 11	travel	
550	19,2-20,8	550	20,0	8,5	1245-1260	250	6,0	100	min.7,5	-	-	
1200	Breakway	VH ca	.49°		1310-1340				5,9-6,1 345 =2,0			
1450	0 - 1							450	0 - 1			

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

	lelivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel delive	ery characteristics	Starting f	uel delivery d 6
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes:/ mm 7
1000	49,0 - 50,0 (47,0 - 52,0)			•		
						./.

Checking values in brackets

5.79

**BOSCH** 

Upper rated s	peed		Intermediate	rated spe	ed	Lower rated	speed		Sliding si	eeve travel
		Control rod (1a)	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		①
lever			lever	rev/min	mm 4		rev/min	mm ③	rev/min	ww
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	<b>-</b>	-	_	ca.19	250	5,5	650	
	Х	= 4,0			ĝ. 		100	min.19	10,5	10,6
ca.53	9,5 4,0 1100	940-950 955-985 0,3-1,7				<u>3</u> a	250	5,9-6,1 350= 2,0 0 - 1	370 11,7	12,3

Torque control travel a =

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test on tem		Rotational-speed (2b) limitation intermediate speed	Fuel delivingh idle s	peed 50	Starting Idle switchin		Torque- travel	Control rod	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm3/1000 strokes	rev/min	travel mm	
In acc namep1	ordance with	940-950*					0	9	

Checking values in brackets

\* 1 mm less control rod travel than col 2

### **B. Governor Settings**

Upper rated	speed			Intermediate	rated spe	ed	Lower rated	speed		Studion	leeve travel
Degree of deflection of control		Control rod travel mm	(a)	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel	Sildings	1
lever	mm	rev/min	(2a)	lever	rev/min	rim (4)	lever	rev/min	mm (3	rev/min	rnm
1	2	3		4	5	6	7	8	9	10	11
							За				

Torque control travel a =

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil ten		intermediate speed	Fuel deliv	very characteristics 5a speed 5b	Starting idle switching		Torque- travel	Control rod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min (4a)	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

\* 1 mm less control rod travel than col. 2

H24

WPP 001/4 1. Edition

supersedes ...

PES 4 A 90 D 410 RS2518 RQ 300/1200 AB989DL RS2518Z

..989DL

company: OM Brescia engine: CO3/110

8340.05

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings
2,15-2,25
(2,10-2,30)
m

mm (from BDC)

		12910-29307				
Rotational speed rev/min	Control rod travel • mm 2	Fue! delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	10,3	6,0 - 6,2	0,3(0,45)	11,1	6,9 - 7,1	
300 900/500	+ 0,1 7,9-8,1 	0,9 - 1,5 C, 4 -5	0,2(0,4) 0,4(0,55)	1	0,9 - 1,5	

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

(1)

Checking PRG che	ck (1)	Full-load : Setting po	d speed regulation point   Test specifications Control   Control			Idle speed regulation   Setting point   Test specifications				Torque control		
rev/min 1	Control rod travel mm 2	rev/min 3		Control red travel mm 5	rev/min 6	rev/min 7	Control red travel rnm 8	rev/min 9	Control rod travel mm 10	rev/min	Control rod Travel	
600	15,6-16,4	500	16,0		1245-1260 1360-1390	300	6,0	100	min.7,5	4.000	± 0,1	
1200 1450				4,0	1300-1390			300 450-4 600	5,9-6,1 90 = 2,0 0 - 1	1200 710 630	10,3 10,6 10,9	

Torque-control travel on flyweight assembly dimension a = 0,4

Speed regulation: At

1 mm less control rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel delive	ery characteristics 3b	Starting for	uel delivery 6
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes:/ mm
1200	60,5 - 61,5 (58,5 - 63,3)	500	900	55,5 - 58,5 (53,5 - 60,5)	100	116,25-122,25
			500	58,5 - 61,5 (56,5 - 63,5)		
						./.

Checking values in brackets

(1)			•	_	cifications (4)	Idle speed regulation Setting point   Test specifications 5				Torque control		
	Control rod travel mm	rev/min	Control rod travel rnm	Control rod trävel mm 5	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
600	15,6-16,4	600	16,0	10,1	1245-1260 1370-1400		6,0	100 300	min.7,5 5,9-6,1	1200	± 0 11,1	
1200 1450	15,6-16,0 0 - 1			7,0	1370 1400			445- 600	485=2,0 0 - 1	710 500	11,3	

on flyweight assembly dimension a = 0,4

Speed regulation At

rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np 40°C (104°F)	Control rod stop 3a	Fuel delive	ery characteristics 3b	Starting for	uel delivery 6
rev/min	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes / mm 7
1200	69,5 - 70,5 (67,5 - 72,5)	500	900	67,5 - 70,5 (65,5 - 72,5)	100	126,25-129,25
			500	61,5 - 64,5 (59,5 - 66,5)		

Checking values in brackets

### **B.** Governor Settings

Checking PRG che rev/min 1	Control rod travel	1	Full-load s Setting po rev/min 3	•	rev/min	Idle spec Setting p rev/min 7	Control rod travel	Test spe	Control rod travel mm	fey/min	Control rod (3)

Torque-control travel on flyweight assembly dimension a =

Speed regulation At

1 mm less control rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	Starting for	d Control
rev/min	cm <sup>3</sup> /~1000 strokes	rev/min	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes / mm

VDT-WPP 001/4 1. Edition

En

PES 8 A 75 D 320 RS 2463 Inlet pressure 2.5 bar (1)

EP/RSV 450-1300 AOB 1088 D

supersedes

company:

DV 550 C

IHC

engine:

(172 PS)

See note 1,2,3 -page 3!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	10,75-	6,7 - 6,8	0,3			
300	10,85	0,1 - 1,5 - 3,6 - 4,2 -	(Cyl. 1- (Cyl. 2-	4-6-7) 3-5-8)		

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

Degree of deflection of control	rated speed rev/min 2	Control rod travel mm 3	Degree of Control rod deflection travel of control			Degree of deflection of control lever	rated spe rev/min 8	control rod travel mm	3 Tor rev/min 10	que control Control rod travel mm 11
ca.52	1300 1320 1500	12.8-13,2 12,2-12,6 4,8- 6,8	without spring	without auxiliary			450 100 380	5,7 19 - 21 6,5-21,0	900 540	10,9- 11,1 10,9-
5	1580 1700	1,5- 4,0 0,2- 1,2	with au spring	ıx il ia:	ry		600 750	1,5- 3,5 0- 1,0		11,1

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-to	ad stop	6 Rotational- speed limitat. 3 Fuel delivery characteristics			Starting Idle	fuel delivery	5a) idle stop		
Test oil tem rev/min 1	cm <sup>3</sup> /1000 strokes	Note: changed to rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm	
1300	67,0-68,0 (66,0-69,0)	1475 1475: 6-7 mmRW	900	61,5-63,5 (60,5-64,5)	100 450 100 450	112,0-135,0 8,0- 10,0 0 0		2-3-5-8 1-4-6-7	

Checking values in brackets

- (1) Supply pressure 2.5 bar
- (2) Barrel 1: Start of dely. at CRT 10.7 = 1.95 + 0.05 mm cyl. 1-7-6-4 (90° each) Barrel 2: Port opening at CRT 10.7 = 3.95 + 0.05 mm cyl. 2-8-3-5 (90° each)
- (3) In start-of-delivery position of barrel 1 at CRT 10.7 mm, use setting device to position jaws of coupling horizontally and tighten screws to  $25-30~\rm N$ !

# Test Specifications Fuel Injection Pumps and Governors

40

VDT-WPP 001/4 2. Edition

En

PES 6 A 85D 420 LS 2264

EP/RSV 375-1100 A 2 B 636 DR

supersedes

22.3.73

company: engine: Case A 504 BD

Test with case overflow valve!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

2,15 + 0,1

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,1 - 4,5	0,5			
	6 12	1,1 - 1,9 7,2 - 8,0				
200	6	0,9 - 1,7				

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

ed speed		Intermediate rated speed  4 Lower rated speed  3					3 Tor	que control	
	travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
	3	4	5	6	7	8	9	10	11
1120	13,0			•••	ca.23	375	7,9	1100	0
1160 1190	8,6 4,4			liary		150	19 - 21		0,5-0,7
1140 1200	12,6-13,2 4,0-6,2			ary		450 620	4,5-6,1 0 -1,5	600	0,7-1,0
	1120 1160 1190	Control rod travel mm 3 1120 13,0 1160 8,6 1190 4,4 1140 12,6-13,2 1200 4,0-6,2	Control rod travel Degree of deflection of control lever 4  1120 13,0 1160 8,6 1190 4,4 spring  1140 12,6-13,2 with a spring	Control rod travel    Control rod travel   Degree of deflection of control lever   rev/min   5     1120	Control rod travel    Control rod travel   Degree of deflection of control lever   1120   13,0   160   8,6   without auxiliary   spring   1140   12,6-13,2   with auxiliary   spring   1200   4,0-6,2   spring   1140   12,6-13,2   spring   spring   1140   spring	Control rod travel    Control rod travel   Degree of deflection of control lever   Fev/min   S	Control rod travel   Degree of deflection of control lever   rev/min   mm   3     Control rod travel   mm   6     Control rod deflection of control lever   7   Rev/min   8   Ca.23   375   Ca.23   375   Ca.23   375   Ca.23   Ca.2	Control rod travel   Control rod travel   Control rod travel   Control rod travel   Control rod travel   Control rod travel   Control rod deflection of control lever   Control rod travel   Control rod deflection of control lever   Control rod travel   Control	Control rod travel   Degree of deflection of control lever   1120   13,0   1160   8,6   1190   4,4   Spring   Spring   Control rod travel   Mm   Fev/min   Mm   Fev/min   Rod   Ro

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-loa	nd stop	6 Rotational- speed limitat.				fuel delivery	5a Idle stop		
Test oil temp rev/min 1	. 40°C (104°F) cm <sup>3</sup> /1000 strokes 2	Note: changed to rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm³/1000 strokes	rev/min 8	Control rod travel mm 9	
1100	92,5-94,5	1140-1155*	750 650 1200	101,5-105,5 max. 104,5 12,5- 20,5	100	12,6-13,4	375	18,5- 22,5	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

As opposed to VDT-MPP 001/4 - 1st supplement - pumps 2263, 2264, 2354, 2459, 2460, 2461 and 3013 feature the following special setting:

1. Governor-spring adjustment	corresponds to	(1)
<ol><li>Pre-adjustment of full-load delivery and noting down of control-rod travel</li></ol>	roughly corresponds to	(2)
3. Reduce full-load control-rod travel as oppose by 1.0 mm by screwing back full-load stop scr	d to (2) ew roughly corresponds to	(2)
4. Screw in torque-control retainer until full-le delivery is attained	oad roughly corresponds to	(3)
5. Adjustment of breakaway	corresponds to	(4)
<ol><li>Testing of torque control and fuel-delivery characteristics</li></ol>	roughly corresponds to (3)	(3a)
7. Idle adjustment	corresponds to	(4)
8. Testing high idle; test starting fuel deliver adjust with control-rod stop	y and corresponds to	(5)

Please consult test instructions as regards information given in parentheses!

Testoil-ISO 4113

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 MB 5.7 1. Edition

PES 6 A 90 D 410 RS 2517

ROV 300-1425 AB981L

company:

Daimler-Benz OM 352

(130 PS)

engine:

\*\* TAS-Instruction see page 2!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Rotational speed rev/min	al speed   Control rod travel   Fuel delivery   cm³/100 strokes   3		Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	9,7	6,1 - 6,3	0,3(0,45)			
300	(+0,1) 7,3-7,5	0,6 - 1,2	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Upper rated	speed		Intermediate	rated sp	eed	Lower rated	speed		Sliding s	leeve travel
Degree of deflection	revimin Control	Control rod travel	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		0
of control lever	rod travel	mm rev/min (28)	of control lever	rev/min	mm 4	of control lever	rev/min	mm ③	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.66	1425 1700	16,0-19,4 0 - 1				ca.10	100 300 570	min.7,3 5,7-5,9 -630=2,0	400 1425	1,4-2,2 8,1
ca.61	8,7 4,0	1455-1465 1540-1570				39	800 350-	0 - 1		

Torque control travel a =

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-ros Test oil ten		Rotational-speed (2b) limitation intermediate speed rev/min	Fuel delivingh idle s	rery characteristics 5a peed 5b cm³/1000 strokes	Starting Idle switchin	ng point	Torque- travel	Control 5  Control rod travel
1	2	3	4	5	6	7	8	9
1400	61,5-62,5 (59,5-64,5)	1455-1465*			100	10,1-10,3 mm RW**		
					300	6,25-12,25		
					100-	·220(80-240)		./.

Checking values in brackets

### Note: \*\*

TAS (temp.-cont'd lim. of start-fuel dely.) is set after adjusting full-load delivery and switching point:

- 1. Additionally attach control-rod-travel measuring device 0 681 440 009 (EFEP 171) and make it correspond to previously fitted control-rod-travel measuring device on drive end.
- 2. Detach control-rod-travel measuring device on drive end.
- 3. Fit TAS and at  $n = 100 \text{ min}^{-1}$  set it to 10.1 10.3 mm control-rod travel at ambient temperature.
- 4. Tightening torque 3.0 mkp on threaded bushing at pump housing.

WPP 001/4

DAF 6,2 c 3

1. Edition

PE 6 A 90 D 320 RS2384

EP/RSV 250-1200 A5 B779R

supersedes

Refer to Page 2 for LDA (manifold-pressure compensator)

company: DAF

setting and start test!

DT 615

Port closing difference between control-rod travel 9 mm and max. 2,5 - 3.5°

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings 2,20-2,30 RW 9 mm (from BDC)

Rotational speed rev/min	travel	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,3	7,0 - 7,2	0,3(0,45)			
250 600	5,8-6,0 	+0,1 0,8 - 1,2 C, 4-5	0,2(0,4) 0,4(0,55)	l .		

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

Upper Degree of deflection of control lever	rated speed rev/min 2	Control rod travel mm 3	Intermediate Degree of deffection of control lever	1	Lower Degree of deflection of control lever	rev/min	Control rod travel mm	3 Tor	que control Control rod travel ± 0,1 mm
loose	800	0,3-1,0			ca.22	250	5,5	250	10,8
ca.54	9,4 4,0 1450	1240-1250 1285-1315 0,3-1,7	7			100 250 380-4 520	min.19 5,9-6,1 10 = 2,0 0 - 1		

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

	ead stop	6 Rotational- speed limitat.		el delivery sracteristics	Starting Idle	fuel delivery	5a Idle stop	
Test oil tem rev/min 1	p. 40°C (104°F) cm <sup>3</sup> /1000 strokes 2	Note: changed to rev/min 3	rev/min cm³/1000 strokes 4 5		rev/min cm³/1000 strokes 7		rev/min 8	Control rod travel mm
LDA 1000	0,7 bar 70,5-71,5 (68,5-73,5)	1240~1250*	LDA 600	0 bar 50,0-52,0 (48,0-54,0)				
								./.

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Test at n = 1000 rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting		Measurement	diminution Control rod travel- difference
	Gauge pressure =	bar	Gauge pressure = bar	mm (1)
2384 with 779R	0			9,3 - 9,5
			0,14	9,6 - 9,9
			0,26	10,1 -10,2
			0,68	10,3 -10,4
	•			

Notes

(1) when n =

rev/min and gauge pressure =

bar ( = maximum full-load control rod travel)

### Adjustment information:

- First adjust full-load delivery at max. pressure at LDA (manifold-pressure compensator) stop screw in housing.
   Then set 1/2 of a turn more control-rod travel at injected-quantity stop screw of governor.
- 2. Adjust full-load delivery without charge-air pressure at bell crank in LDA.
- 3. Cold-start device (see sketch)

Test disengaging force at  $n = 0 \text{ min}^{-1} = 32 - 38 \text{ N}$  with spring scale.

Set starting control-rod travel to 20 + 0.5 mm.

Test disengaging speed  $n = 800 - 1000 \text{ min}^{-1}$ .

40

WPP 001/4 0MB 7,4 a

4. Edition

PES 6 A 90 C 410 RS 2340 .. D ..

RQV 250-1300 AB 803 D RQV 325-1050 AB 923 D RQV 250-1300 AB 944 D supersedes

12.71,7.74,3.75 OM Brescia

engine: CP 3

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

2,15+0,1

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100/strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,8 - 6,3	0,4			
	6 12	2,5 - 3,4 10,2 -11,1				
200	9	3,2 - 4,1				

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

RQV .. 803D

Upper rated s	í i			Intermediate	rated sp				speed	10	Sliding sleeve trave	
deflection	Control	Control rod travel	•	Degree of deflection		Control travel	rod	Degree of deflection of control		Control rod travel		(1)
of control lever	rod travel	rev/min	28	of control lever	rev/min	mm	•	lever	rev/min	mm 3	rev/min	mm
1	2	3		4	5	6		7	<u> </u>	9	10	11
ca.66	1340 1450	15,0-17		-	-		-	ca.10	140 250	6,0-8,0 4,2-6,1	1340	8,3
	1550	8,2-12 0,5- 7							400		1300	0
	1680	0							630	0		
							1	38)			600	0,1-0,3

Torque controi travel a =

mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Control-roo	Control-rod stop (est oil temp. 40°C (104°F) 2 Imitation intermediate spee			peed 50 cm <sup>3</sup> /1000 strokes	idie switchir		Torque-control 5 travel  Control ro travel rev/min   mm	
1	2	3	4	5	6	7	8	9
1300	74,0 - 76,0	1320	1000 600	72,5-75,5 64,5-67,5	100	ca.15mmRW		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Upper rated s	peed		Intermediate	rated spe	ed	Lower rated	speed		Suding el	eeve travel
deflection of control	Control rod travel	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever		Control rod travel	rev/min	mm
11	2	3	4	5	6	7	8		10	11
ca.68	1060 1120 1220 1310	15,0-18, 9,7-14, 0 - 7	-	-	<b>-</b>	ca.18	150 250 380 670	9,6-11,7 7,4-10,0 2,0- 5,0		8,3
						<b>3</b> a			600	0,3-0,4

Torque control travel a = 0,3

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed (2b) limitation intermediate speed	Fuel deln high idle s	rery characteristics (5a)	Starting Idle switchir		Torque- travel	Control rod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm3/1000 strokes	rev/min	travel mm
1	2	3	4	5	6	/	8	9
1050	77,5-79,5	1090-1100*	500	66,0-69,0	100	15,0-15,6mm	RW	
						ge-over point 270 U/min		
:	/							

Checking values in brackets

\* 1 mm less control rod travel than col 2

\*\* Use overspeed sensor to effect adjustment such than lamp lights up at n = 1455-1465. Check full load after setting sensor!

**B. Governor Settings** 

RQV .. 944 D

Upper rated s	peed			Intermediate	rated spe	ed	Lower rated	speed		Sliding sl	eeve travel
		ri GAGI	(a)	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel	Siloning a	1
of Control lever	rod travel mm	rev/min (	(2a)	of control lever	rev/min		of control lever	rev/min	mm 3	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.66	1340 1450 1550 1680	15,0-17 8,2-12 0,5- 7	,8	-	-	-	ca.10	140 250 400 630	6,0-8,0 4,2-6,1 0,2-1,4	1340	8,3 0 0,1-0,3
							<u>3</u> a)			800	0,1-0,3

Torque control travel a =

mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil tem		Rotational-speed (20) limitation intermediate speed rev/min	Fuel delin high idle s	rery characteristics 5a			Torque- travel	Control rod travel
1	2	3	4	5	6	7	8	9
1300	74,0-76,0	1340-1350* **	1100 500	73,5-76,5 61,0-64,0	100	ca.15mm RW		

Checking values in brackets

\* 1 mm less control rod travel than col 2

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# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 MB 5,7 v 1

1. Edition

PES6A90D410RS2571

R0V300-1400AB884L

supersedes

company:

Daimler-Benz

1 - 5 - 3 - 6 - 2 - 4

 $0 - 60-120-180-240-300 \pm 0,50 (0,75)$ 

OM 352 A engine:

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings
2,00-2,10
Part closing at prestroke (1,05-2,15)

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control vaive) mm 6
1400	12,0-12,1	6,4-6,5	0,3(0,45)			
300 600	6,4-6,6	0,8-1,4 C, 4-5	0,2(0,4) 0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in [

### **B.** Governor Settings

Upper rated s	peed			Intermediate	rated sp	ed		Lower rated speed				Sliding slaeve travel	
Degree of deflection	rev/min Control	Control rod (travel	<b>(b)</b>	Degree of deflection		Control re	od	Degree of deflection		Control ro	d		1
of control lever	rod travel	mm rev/min (	(2B)	of control lever	rev/min	mm	4	of control lever	rev/min	mm	3	rev/min	mm
1	2	3	_	4	5	6		7	8	9		10	11
ca.68	1400 1750	15,2-17 0 -	,8 1	-	-	-		ca.11	100 300 1100	min.8 6,4-6 max.1	,6		
ca.54	12,0	1440-145	50							640=2			
	3,4	1575-160	05			<u> </u>		(3a)					

Torque Control travel a =

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational-speed 2b limitation intermediate speed			Starting Idle switchir	<u> </u>	Torque- travei	Control rod	
rev/min	cm <sup>3</sup> /1000 strokes .	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm	
1	2	3	4	5	6	7	8	9	
1400	64,0-65,0 (62,0-67,0)	1440-1450*	600	48,0-50,0 (46,0-52,0)	100	72,25-82,25			

Checking values in brackets

PE8A90D320LS2514

ROV250-1250 AB 1127 R

supersettes "

MAM company: D 2538

8 - 7 - 2 - 6 - 3 - 5 - 4 - 1 0 - 45- 90-135-180-225-270-315

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel injection Pump Settings

(1,45-1,65)

mm (from BDC)

RW 10.5

Cy1.8

Lour costud at bias		1 50-1 60	Itali (ii dili dec)		111 1030	
Rotational speed rev/min	Control red travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>2</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,5	10,2 - 10,3	0,3(0,45)			
250 800 500	6,9-7,1 - -	0,9- 1,5 C, col. 4 - 5	0,2(0,4) 0,4(0,55) 0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in (

# Testoil-ISO 4113

### **B. Governor Settings**

Upper rai	ted s	peed			Intermediate	rated sp	eed	Lower rated	speed	1	Sliding s	leeve travel
Degree o	n		(LEAB)	9	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		1
of contro		rod travel mm 2	mm rev/min (	29	of control lever	rev/min 5	mm 4	of control lever	rev/min 8	mm 3	rev/min	mm 11
ca.		1250 1500	15,2-17, 0 - 1	8				ca. 13	100 250 450	min. 8,4 6,9-7,1 1,0	630	1,1 4,5-4,9 8,8
ca.	47	10,5 4,0	1290-130 1355-138							105 = 2,0		
								<u></u>				

Torque control travel a =

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-ros Test oil ten		Rotational-speed 2b limitation intermediate speed	Fuel delivingh idle s	rery characteristics 5a peed 5b	Starting Idle switching	<u> </u>	Torque- travel	control (5)
rev/min	cm³/1000 strokes .	revimin 4	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9+0.2
1250	102, 5-103, 5 (100, 5-105, 5)	1290-1300 *	800	(94,0-101,0)	250	144, 25	1250 1035 - 810	11,5 11,5 11,8
			500	min. 94,0	250	7 mm RW	500	11,9

Checking values in brackets

\* 1 mm less control rod travel than col. 2

WPP 001/4 MB 3,8 n 3 2. Edition

PES 4 A 90 D 410 RS 2570

1 - 3 - 4 - 2

0 -90 -180-270

RQV 300-1400 AB 1111 - 1 L

supersedes 11.80

company:

Daimler-Benz

engine:

OM 314

62,5 kW(85 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

RW 10,5

Lour closura as bred	IN OND	2.25-2.35	(							
Rotational speed ray/min	Control fod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6				
1400	10,2	6,2 - 6,3	0,3(0,45)							
300 400	+0,1 8,2-8,4 Se	0.9 - 1.5 ct. C, col. 4,5	0,2(0,4) 0,4(0,55)							

Adjust the fuel delivery from each outlet according to the values in [

### **B. Governor Settings**

Upper rated s	peed		Intermediate	rated sp	ed	Lower rated	speed		Sliding sleeve trave	
	rev/min Control	Centrol rod (1	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel	. 0	
	rod travel	mm rav/min (2	of control	rev/min	mm (4)	of control lever	rev/min	mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.68	1400 1700	15,2-17,8 0 - 1	3			ca.20	100 300	min.9,8 8,2-8,4	300 650 1450	1,1 3,8-4,0 8,0
ca.62	9,2 4,0	1440-1450 1535-1569				<b>3a</b>	570-6	530 = 2,0		

Torque control travel a =

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational-speed 2b limitation intermediate speed	Fuel deliv high idle s	very characteristics (5e)	Starting Idle switchin	•	Torque- travel	Control (5) Control rod	
rev/min	cm³/1000 strokes	rev/min 44	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	WW.	
1	2	3	4	5	6	7	8	9	
1400	62,5-63,5 (60,5-65,5)	1440-1450*	400	46,5-50,5 (44,5-52,5)	100	72,25-82,25 14,8-15,2 mm RW	1400 1000 600 400	10,2 10,6 10,8 11,2	
					100-	-220(80-240)			

Checking values in brackets

WPP 001/4 MB 3,8 n 4

2. Edition

PES 4 A 90 D 410 RS 2570

RQV 300-1400 AB 1124 L

supersedes

11.80

company:

Daimler-Benz

OM 314 engine.

62,5 kW(85 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	10,2	6,2 - 6,3	0,3(0,45)			
300 400	+0,1 8,2-8,4 - Sec	0,9 - 1,5 t. C, col. 4,5	0,2(0,4) 0,4(0,55)	i		

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

Upper rated	speed		Intermediate	rated sp	eed	Lower rated	speed	1	Sliding s	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm cev/min 2a	Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm 1
1	2	3	4	5	6	7	8	9	10	11
ca.68	1400 1700	15,2-17,8 0 - 1				ca.20	100 300 570-6	min.9,8 8,2-8,4 30 = 2,0	300 650 1450	1,1 3,8-4,0 8,0
ca.62	9,2 4,0	1440-1450 1535-1565				<u>3a</u>				

Torque control travel a =

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter	d stop np. 40°C (104°F) 2	timitation intermediate speed	high idle s		idle switchir	ng point	Torque-control ( travel Control r travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
1400	62,5-63,5 (60,5-65,5)	1440~1450*	400	46,5-50,5 (44,5-52,5)	100	72,25-82,25 14,8 - 15,2 mm RW 220(80-240)	1400 1000 600 400	10,6
					100-	<b>1</b> 220(80-240)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 MAN 12.8 b 2. Edition

PE 8 A 95 D 320 LS 2421

ROV 250-1250 AB967R

supersedes8.77 company: M A N

engine: D 2538 MTE

$$8 - 7 - 2 - 6 - 3 - 5 - 4 - 1$$
  
0 -45 -90 -135-180-225-270-315°  $\stackrel{+}{=}$  0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Cv1. 8

Rotational speed rev/min	Control rod travel rnm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,4	10, 1 - 10, 3	0,3(0,6)			
	(+0,1)					
250	6,4-6,6	1,5 - 2,1	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in [

### **B.** Governor Settings

Testoil-ISO 4113

Tu	ipper rated s	peed			Intermediate	rated spe	ed		Lower rated	speed		Sliding s	leeve travel
		rev/min Control	Control rod travel	<b>(10)</b>	Degree of deflection		Control :	rod	Degree of deflection		Control rod travel	, ①	
-		rod travel mm	mm rev/min	(20)	of control lever	rev/min	mm	(4)	of control	rev/min	rım (3)	rev/min	mm
1		2	3		4	5	6		7	8	9	10	11
	ca.50	1275		,4	-	•	-		ca.13	100	min.7,5		0,5-1,2
		1450	U - 1							250 310-	5,9-6,1  $ 370 = 2,0 $	600 1275	4,0-4,4 8,3
	ca.43	9,5	1290-13	00						500	J - 1		0,0
-		4,0	1340-13									-	-
L									(3 <u>a</u> )				

Torque control travel a =

mm

### C. Settings for Fuel Injection Pump with Fitted Governor

	1 stop ip. 40°C (104°F) 2	limitation intermediate speed	high idle s	rery characteristics 50 peed 50	idle switchir	switching point		Control cod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>®</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
1250	99,5 - 101,5 (97,5 - 103,5	1290 <b>-</b> 1300 <sup>-</sup>			100 250	15,7-16,3 mm RW 15 - 21		

Checking values in brackets

\* 1 mm less control rad travel than col. 2

# Test Specifications Fuel Injection Pumps ① and Governors

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WPP 001/4 MB 3,8 n 2

1. Edition

PES4A90D410RS2570

ROV300-1400AB1065DL

supersedes

company: Daimler-Benz

OM 314

engine:

62,5 kW(85PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at pres		,25-2,35 ,20-2,40)	mm (from BDC)			
Rotational speed	Control rod travel	Fuoi delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm .	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	<b> </b> 3	4	2	3	6
1400	10,5-10,6	5,9 - 6,0	0,3(0,45)			

rev/min 1	mm 2	3	4	2	3	6
1400	10,5-10,6	5,9 - 6,0	0,3(0,45)			
300	5,9-6,1	1,1 - 1,7	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

Upper rated	speed			Intermediate	rated sp	eed	Lower rated	speed	•	Stiding s	leeve travel
Degree of deflection of control lever	-	Control rod travel mm rev/min	(a) (28)	Degree of deflection of control lever	rev/min		Degree of defrection of control lever	rev/min	Control rod travel	rev/min	mm (1)
1	2	3		4	5	6	17	8	9	10	11
ca.62	400	15,2-17	,8	-	-	-	ca.11	100	min.7,5		
	700	0 -	1					300	5,9-6,1		
ca.60	9,5	1440-14	50		,			  380-4	50		
	4,0	1550-158	30				<b>3</b> a				

Torque control travel a =

mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil ten		Rotational-speed 2b timitation intermediate speed	Fuel deliv	rery characteristics (5e)	Starting Idle switchir	$\mathbf{O}$	Torque travel	Control 5
rev/min	cm³/1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1006 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
1490	59,0-60,0 (57,0-62,0)	1440-1450*	1000	58,0-60,0 (56,0-62,0)	100	72,25-82,25		10,5-10,6 10,6-10,7
			600	51,0-53,0 (49,0-55,0)	100-	220(80-240)	600	10,7-10,8

Checking values in brackets

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 MB 5.7 w 1 1. Edition

PES 6 A 90 D 410 RS 2565

ROV 300-1400 AB 884L

supersedes

company.

Daimler-Benz

engine:

1 - 5 - 3 - 6 - 2 - 4 0 -60 -120-180-240-300

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

RW 10.5

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring ore-tensioning (torque-control valve) mm 6
1400	11,1	6,1 - 6,2	0,3(0,45)			
300 600	+0,1 6,0-6,2 	0,8 - 1,4 C, col.4-5	0,2(0,4) 0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in [

### **B. Governor Settings**

Upper rated s	speed		Intermediate	rated sp	eed	Lower rated	speed			Sliding sleeve travel	
	rod travel	Control rod (a travel mm rev/min (2a	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control root travel mm (	<u>'</u>	rev/min	mm (1)
1	2	3	4	5	6	7	8	9		10	11
ca.68	1400 1750	15,2-17,8 0 - 1,0				ca.13	100 300 610-6	min.8 6,0-6 570 = 2	,2		
ca.56	10,1 3,4	1440-1450 1575-1605				330-40 3a					

Torque control travel a =

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roc Test oil ten		Rotational-speed 2b limitation intermediate speed	(30)		Starting idle switching	_	Torque- travéi	Control od
rev/min	cm <sup>3</sup> /100G strokes .	rev/min (4a)	rav/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	nim\vet	mm .
1	2	3	4	5	6	7	8	9
1400	61,0-62,0 (59,0-64,0)	1440-1450*	600	52,0-54,0 (50,0-56,0)	100 100-	13-13,4 mm RW 72,25-82,25 220(80-240)		

Checking values in brackets

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 MB 3,8 n 2

2. Edition

PES 4 A 90 D 410 RS 2570

RQV 300-1400 AB 1065-1 DL

supersedes

2.80

Daimler-Benz company:

OM 314

engine:

62,5 kW(85 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

1 - 3 - 4 - 2

0 -90-180-270

RW 10,5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	10,2	6,2 - 6,3	0,3(0,45)			
	+0,1					
300	8,2-8,4	0,9 - 1,5	0,2(0,4)			
400	-	C, col.4-5	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in [

### **B. Governor Settings**

Upper rated	speed			Intermediate	rated sp	ed	Lower rated	speed		Sliding sleeve travel	
deflection	100			Degree of deflection of control		Control rod travei	Degree of deflection of control		Control rod travel		1
of control lever	rod travel mm	rev/min			rev/min	mm 4	lever	rev/min	mm ③	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.68	1400	15,2-17,	8	-	-	-	ca.20	100	min.9,8	300	1,1
	1700	0 - 1						300	8,2-8,4	650	3,8-4,0
ca.62	9,2	1440-145	_ n					570-6	530 =2,0	1450	8,0
	1					}			200 -2,0	1,450	0,0
	4,0	1535-156	5				(3a)				

Torque control travel a =

1,1 mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil ter		Rotational-speed 2b limitation intermediate speed	Fuel deliv	very characteristics 5a poeed 5b	Starting Idle switching		Torque- travel	Control 5	
rev/min	cm³/1000 strokes	rev/min 48	rev/min	cm <sup>3</sup> /1000 strokes	rev/min cm³/1000 strokes		rev/min	travel mm	
1	2	3	4	5	6	7	8	9+0,2	
1400	62,5-63,5 (60,5-65,5)	1440-1450*	400	46,5-50,5 (44,5-52,5)	100	72,25-82,25	1400 400 600 1000	10,2 11,2 10,8 10,5	
					100-	1 220(80-240)			

Checking values in brackets

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 MB 3,8 n 3

1. Edition

PES4A90D410RS2570

ROV 300-1400 AB 1111-1L

supersedes

company:

Daimler-Benz OM 314

engine:

62.5 kW(85 PS)

1 - 3 - 4 - 20 -90 -180-270

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,25-2,35

mm (from BDC)

RW 10,5

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /190 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	10,2	6,4 - 6,5	0,3(0,45			
300 400 1200	+0,1 7,9-8,1	0.9 - 1.5 C, col.4-5	0,2(0,4) 0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in [

### **B.** Governor Settings

Upper rated s	peed			Intermediate	rated sp	eed	Lower rated speed			Sliding sleeve travel	
deflection	rev/min Control	Control rod travel	<b>(1a)</b>	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		1
of control	rod travel mm	mm rev/min	<b>28</b>	of control lever	rev/min	mm 4	of control lever	rev/min	mm ③	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.68	1400 1700	15,2-17 0 -	,8 1				ca.20	100 300 675	min.9,4 7,9-8,1 1,0	300 650 1450	1,1 3,8-4,0 8,0
ca.62	9,2 4,0	1440-14! 1535-156					550-670	545 -	- 605=2,0		
							<b>3a</b>				

Torque control travel a =

1,1 mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil te		Rotational-speed 2b timitation intermediate speed	Fuel deliv	very characteristic 3 (5a)	Starting Idle switchir	0	Torque- travel	Control rod	
rev/min	cm³/1000 strokes .	rev/min 40	rev/min cm³/1000 strokes		rev/min cm³/1000 strokes		rev/min	travel mm	
1	2	3	4	5	6	?	8	9+0.2	
1400	64,0-65,0 (62,0-67,0)	1440-1450*	1200	61,5-64,5 (59,5-66,5)	100	72,25-82,25	1400 1005	10,2 10,4	
			400	49,5-52,5 (47,5-54,5)			615 400	11,0 11,3	
					100-	220(80-240)			

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 3,8 n 4
1. Edition

Eη

PES 4 A 90 D 410 RS 2570

RQV 300-1400 AB 1124 L

supersedes

company: Daimler Benz

engine: OM 314

62,5 kW(85 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection, Pump Settings

Festoil-ISO 4113

Port closing at pres		2,20-2,40) 2,25-2,35	mm (from BDC)	RW 10	,5	
Rotational speed	Control rod travel	Fuel delivery  cm <sup>3</sup> /100 atrokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1400	10,2	6,4-6,5	0,3(0,45)	-		6
300 400 1200	+0,1 7,9-8,1 - -	0,9-1,5 C, col.4-5	0,2(0,4) 0,4(0,55) 0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Upper rated s	speed			Intermediate	rated sp	eed	Lower rated	speed		Slidings	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm	mm		Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm 3	rev/min	mm 1
<del></del>	2	3		4	5	0	/	8	9	10	11
ca.68	1400 1700	15,2-17,8 0 - 1	3				ca.20	100 300 675	min.9,4 7,9-8,1 1,0	300 650 1450	1,1 3,8-4,0 8,0
ca.62		1440-1450 1535-1565					550-670 ③	545-6	05 = 2,0		

Torque control travel a = 1,1 mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-ros Test oil ten		Rotational-speed 2b limitation intermediate apped			Starting Idle switchir	0	Torque- travel	control 5
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	rev/min cm³/1000 strokes		cm <sup>3</sup> /1900 strokes	rev/min	travel mm
<u> </u>	12	3	4	5	6	7	8	9 + 0,2
1400	64,0-65,0 (62,0-67,0)	1440-1450*	1200	61,5-64,5 (59,5-66,6)	100	72,25-82,25	1400 1005 615	10,4
			400	49,5-52,5 (47,5-54,5)			400	11,0 11,3
					100-	220(80-240)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# Test Specifications Fuel Injection Pumps 1 WPP 001/4 MAN 7,2 d 1 and Governors

Edition

PES 6 A 85 D 410 RS2139

ROV 250-1250 AB851 DL

supersedeg

companM A N

engine: D 0846 HMX

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at pres		,5-1,6 .45-1,65)	mm (from BDC)			
Rotational speed		Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	9	4,1 - 4,5	0,4			
	6	0,6 - 1,4				
200	.9	1,4 - 2,2				

Adjust the fuel delivery from each outlet according to the values in [

### **B.** Governor Settings

Upper rated s	peed		Intermediate	e rated sp	eed	Lower rated	speed		Sliding sleeve travel	
deflection	rev/min Control	Control rod (18	/ Loanection		Control rod travel	Degree of deflection		Control rod travel		①
	rod travel mm 2	mm rev/min 22	of control lever	rev/min 5	mm (4	of control lever	rev/min	mm 3	rev/min	mm 11
ca. 68	1320 1400 1500 1600	0 - 7	-	-	-	ca. 10	100 250 450 700	7,0-8,0 5,5-6,8 2,4-4,0	300 900 1320	1,8-2,4 4,8-5,2 8,3
						3a)			1250 600	0 0,7-0,8

Torque control travel a = 0,7 mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roc Test oil ten	stop	Rotational-speed 2b limitation intermediate speed	Fuel delivery characteristics 5a Shigh idle speed 5b			fuel delivery 6	Torque- travel	control 5	
rev/min	cm³/1000 strokes .	rev/min 4	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>2</sup> /1000 strokes	rev/min	travel mm	
1	2	3	4	5	6	7	8	9	
1250	69,5 - 71,5	1260-1275 *	800 500		100	18,0-18,5			
			300	max. 0,,5	250	7,0			
								49	
		•			130	-200/min			

Chucking values in brackets

\* 1 mm less control rod travel than col. 2

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WPP 001/4 MAN 9,2 e 1

1. Edition

PES 5 A 95 D 410 LS2488

ROV 250-1100 AB956L

andersedes

company: M A N engine: D 2565 ME

$$1 - 3 - 5 - 4 - 2$$
  
 $0 -72 -144 - 216 - 288$   $\pm 0,50$  (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,45-1,65) mm (from BDC)

Rotational speed rev/min 1		Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,6	11,8 - 12,0	0,3(0,6)			
	(+0,1)					
250	5,6-5,8	1,4 - 1,9	0,3(0,5)	!		
500		C, 4-5 -	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

# Testoil-ISO 4113

### B. Governor Settings

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed		Sliding	leeve travel
		Control rod travel	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel	Onema o	1
of control	rod travel		of control lever	rev/min	mm 4	of control lever	rev/min	mm ③	rev/min	шw
1	2	3	4	5	6	7	8	9	10	11
ca.50	1125 1400	14,4-17,6 0 - 1	-	<b>-</b> ·	-	ca.10	100 250	min.7,2 5,6-5,8		0,5 <b>-</b> 1,2 4,1 <b>-</b> 4,5
ca.43	9,6	1140-1150					310 <b>-</b> 450	370=2,0 0-1	1120	8,3
04.40	4,0	1170-1200				<b>3a</b>			800	<b>-</b>

Torque control travel n =

mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roc Test oil terr		limitation intermediate speed	high idle s	rery characteristics (5e)	Starting idle awitchir		Torque- travel	Control rod	
rev/min	cm <sup>3</sup> /1000:strokes	rev/min 40	rev/min	cm³/1000 strokes	strokes rev/min cm²/1000 strokes			travel mm	
1	2	3	4	5	8	7	8	9	
1100	116,5-118,5 (114,5-120,5)	1140-1150*	500	107,5-111,5 (105,5-113,5)	250	15,7-16,3 mm RW 15 - 20			
		100-' 170 (80-		<b>'</b> 170 (80-190)					

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 STE 6,0 i

1. Edition

PE 6 A 90 D 412 RS 2507 RQV 300-1400 AB 970 DL

supersades

company: Steyr

engine:

WD 610.00

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

2,19-2,29 '2 10-2 20\

mm (from BDC)

Rotational speed rev/min 1		Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	8,5	5,5 - 5,7	0,3(0,45)			
300 900/500	(+0,1) 7,4-7,5 Sect. C,	0,8 - 1,3 col. 4,5	0,2(0,4) 0,4(0,55)	1	,	

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

Upper rated s	Upper rated speed				rated sp	eed	Lower rated	speed		Sliding sleeve travel	
deflection	rev/min Control	Control rod travel	<b>(19)</b>	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel	1	
of control lever	rod travel mm	rev/min	<b>2a</b>	of control lever	rev/min	mm (4)	of control lever	rev/min	mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
	1475 1750	15,2-17	1				ca.13°		min.9,0 5,9-6,1	1475	8,2
ca.39°	1445 1500	ca. 7,5 ca. 4,0						450-	510= 2,0	1400 1100 900	8,5-8,6 8,7-9,0 9,2-9,4
							(3a)			500	9,7-9,8

Torque control travel a = 1,2 mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil ter		Rotational-speed 2b limitation intermediate speed	Fuel deliv	very characteristics 5a	Starting idle switchir		Torque- travel	control 5
rev/min	cm³/1000 strokes	rev/min 40	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
1400	55,5-56,5 (53,5-58,5)	1440-1450*	900 500	52,0-55,0 (50,0-57,0) 44,5-46,5 (42,5-48,5)	100	111,25- 117,25		

Checking values in brackets

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 5,7 n 2 2. Edition

En.

PES 6 A 90 D 410 RS2293 RQV 300-1425 AB960 (1) RS2293Z RQV 300-1425 AB960 (2) supersedes 3.76
company: Daimler-Benz
OM 352
(130 PS - 1)
OM 352 A
(168 PS - 2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke (2,15-2,25 mm (from BDC

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery (1) cm³/100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery (2) cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	9,6	6,1 - 6,3	0,3(0,45)	10,8	7,5 - 7,7	]
300	(+0,1) 6,0 (±0,1)	1,4 - 2,4	0,2(0,4)	(+0,1) 6,0 (±0,1)	1,4 - 2,4	

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Upper rated s	peed			Intermediate	rated sp	eed	Lower rated	speed		Sliding sleeve travel	
deflection	Control	Control rod	<b>(10)</b>	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		1
	rod travel mm	ten/win	<b>2</b> 2	lever	rav/min	mm (4)	lever	rev/min	mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.66		1,4-8	,0	•	-	-	ca.10	100 300 450 600 760	6,6-7,8 4,9-6,4 3,0-4,2 1,3-2,8	400 1425 -	1,4-2,2
							<b>3a</b>				

Torque control travel a =

МП

### C. Settings for Fuel Injection Pump with Fitted Governor

	Full-load de Control-roc Test oil ten		Rotational-speed (2b) limitation intermediate speed	Fuel delivery characteristics (5a) Shigh idle speed (5b)			fuel delivery 6	Torque- travel	Control rod
	rev/min	cm³/1000 strokes .	rev/min 🐽	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
	1	2	3	4	5	6	7	8	9
(1) (2)	1400 "Z" 1400	61,5-62,5 (59,5-64,5) 74,0-75,0 (72,0-77,0)	1455-1465* (1450-1470) 1435-1445* (1430-1450)			100	13,7-14,3 mm RW		
		(72,0-77,0)	(1430-1430)			100-	220 min-1		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

4.77

K13

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# **Test Specifications** ① Fuel Injection Pumps 1 WPP 001/4 MAN 11,1 m and Governors

Edition

PES 6 A 95 D 410 LS 2489

RQV 250-1100 AB 850 DL

company:MAN

engine: D 2566 MUH

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

1,50-1,60 (1,45-1,65) mm (from BDC) Port closing at prestroke

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7	12,4 - 12,7	0,3(0,6)			
	(+0,1)					·
250	5,9-6,1	1,1 - 1,7	0,3(0,5)			
500	C, col	4-5	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	peed		Intermedia	te rated sp	eed	Lower rated	speed		Sliding s	leeve travel
1 0		Control rod travel	Degree of deflection		Control rod travei	Degree of deflection		Control rod travei		1
	rod travel mm 2	mm rev/min (2 3	of control lever	rev/min 5	mm (4)	of control lever 7	rev/min 8	mm 3 9	rev/min 10	mm 11+0,1
ca.50 <sup>0</sup>	1140 1300	14,4-17,6 0 - 1				ca.13 <sup>0</sup>	100 250	mind.7,5 5,9-6,1		11,7 11,8
ca. 42 <sup>0</sup>	1145 1190	ca. 10,7 ca. 4,0					310 <b>-</b> 450	370=2,0 0 - 1	500	11,9
						39				

Torque control travel a = 0,5

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load o Control-ro Test oil te		Rotational-speed 2b limitation intermediate speed	Fuel delivinghide s	rery characteristics 5e	Starting Idle awitchir	0	Torque- travel	Control rod
rev/min	cm³/1000 strokes .	rev/min 40	rev/min	cm <sup>3</sup> /1000 strok <b>es</b>	rev/min	cm³/1600-strokes	rev/min	travel mm
1	2	3	4	5	6	7 mm RW	8	9
1100	123, 0-125, 0 (121, 0-127, 0)	1140-1150 *	500	113,5-118,5 (111,5-120,5)	100	12,6-13,0		
					250	6,0		

Checking values in brackets

\* 1 mm less control rod travel then col. 2

11.76

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 MAN 16.0 e

1. Edition

PE 10 A 90 D 520/5 LS2515

ROV 250-1150 AB852DR

supersedes

MAN company:

engine:

D 2530 MSF

10 - 9 - 4 - 1 - 8 -7 - 6 - 3 - 5 - 2 0 -45 -72 -117-144-189-216-261-288-333
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

1,50-1,60

Cv1, 10

Lou closing at bust	troke /	1 45-1 65)	mm (irom BDC)		091. 10	
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,0	9,5 - 9,7	0,3(0,45)			
250 500	7,4-7,6 	0,9 - 1,5 C, 4-5 -	0,2(0,4) 0,4(0,55)	1		

Adjust the fuel delivery from each outlet according to the values in [

# Testoil-ISO 4113

# **B.** Governor Settings

Upper rated s	peed		Intermediate	nediate rated speed			speed		Sliding s	leeve travel
deflection	rev/min Control	Control rod te	Degree of deflection		Control rod travel	Degree of deflection		Control rod traval		①
of control lever	rod traval	rev/min (2a)	of control	rev/min	mm ④	of control lever	rev/min	mra 3	rev/min	mm
1	2	3	4	5	6	7	8	8	10	11
ca. 50	1175 1350	14,4-18,4 0 - 1	••	-	-	ca. 13	250	min.7,2 5,6-5,8 70 = 2,0		0,6-1,2 4,0-4,4 0 8,3
ca. 44	10,0 4,0	1190-1200 1230-1260					450	0 - 1	-	-
						<b>3</b> a				

Torque control travel a =

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten	np. 40°C (104°F) 2	Rotational-speed (2b) timitation intermediate speed	diate speed		idle switchin	0	Torque- travel	Control rod travel
1	2	3	4	5	6	THE THE	8	9
1150	95,5-96,5 (93,5-98,5)	1190-1200*	500	85, 0-89, 0 (83, 0-91, 0)	250	17,7-18,3 7,0 -170 (80-190)		

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Checking values in brackets

\* 1 mm less control rod travel then col. 2

**K16** 

# **Test Specifications** Fuel Injection Pumps 1 WPP 001/4 MAN 11,1 p 6 and Governors

1. Edition

PES 6A 95 D 410 LS 2542 RQV 250-1100 AB 1068 DL

Testoil-ISO 4113

supersedes

company: MAN

engine:

(177,0 kW-241 PS)

D 2566 ME/MF

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	2,0-12,1	12,6 - 12,8	0,3 (0,6)			
250	5,9-6,1	0,9 - 1,5	0,3 (0,5)			
750/500	-	C, 4-5	0,4 (0,7	)		

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed		Sliding sleeve travel	
deflection	rev/min Control	Control rod (1a) travel	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		0
of control lever	rod travel mm	mm rev/min 2a	of control lever	rev/min	mm 4	of control lever	rev/min	mm ③	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.50	1100	15,2-17,8	1			ca.12	100	min.7,5	250	1,1
	1300	0,0-1,0					250	5,9-6,1	565	3,65-4,05
ca.44	11,0	1140-1150					325 -	385 =2,0	1150	8,1
y y	4,0	1180-1210							વ	
						(3e)			<u> </u>	

Torque control travel a =

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roc Test oil ten	d stop np. 40°C (104°F) . 2	Rotational-speed (25) timitation intermediate speed	high idle s	rery characteristics 5a	idle switchin	ng point	Torque- travel	Control 6 Control root travel
rev/min	cm³/1000 strokes	rev/min 🐣	rev/min	cm <sup>2</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	8
1100	124, 5-126, 5 (122, 5-128, 5)		500 750	max. 113,5 (max. 115,5) 110,5-113,5 (108,5-115,5)	•	124,0-134,0 6,0 mm RW		

Chucking values in brackets

\* 1 mm less control rod travel than col. 2

10.79

**②** 

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps 2 and Governors

40

WPP 001/4 HAN 2,8 a 8
3. Edition

En

PE 4 A 60 C 310 LS 1088, Z RQ 300/1500 AA 466 D .. AB 571 D

supersedes

10.64

company:

Hanomag

engine

D 28 CKL

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

1,9 + 0,1

nem (from BDC)

Rotational speed rov/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	4.5 - 5.0	0,3	12	3.7 - 4.1	
	6	0,5 - 1,2		9	1,7 - 2,5	
200	6	0,3 - 0,9		9	1,0 - 1,8	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

PRG che	g of slider ck 1 Control rod travel mm		•		cifications (4) rev/min 6	rev/min	Control rod travel	Test spe	cifications 5 Control rod travel mm	Torque o	Control rod
1450	13,6-14,5	1450	14,1	1520 1540 1560 1640	10,0-14,1 5,6-12,4 0 - 10 0	540		150 300 400 440	7,0-8,1 3,5-5,9 0 -2,3 0		15,7-16,0 14,2-14,6

Torque-control travel on flyweight assembly dimension a =

-

Speed regulation: At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on ontrol lever p. 40°C (104°F)	Control rod stop (3a)	Fuel deliv	ery characteristics 3b	Starting f	uel delivery d Contra
rev/min	cm <sup>3</sup> /-1000 strokes 2	rey/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes:// mm 7
1500 "Z"	43,2 - 45,2	750	1150 800 500	43,2 - 45,8 45,7 - 48,3 45,7 - 48,3	100	18 - 21
1500	40,0 - 42,0	750	1200 800 500	37,5 - 40,5 41,0 - 44,0 41,0 - 44,0		

Checking values in brackets

. 10.77

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**Testoil-ISO 4113** 

WPP 001/4 MB 5,7 v 4

1. Edition

PES 6 A 90 D 410 RS 2569

1 - 5 - 3 - 6 - 2 - 4

0 -60 -120-180-240-300

ROV 300-1450 AB 1114 L

supersedes

Daimler-Benz company:

OM 352

engine:

81 kW (110 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC) RW 10,5

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1450	9,2-9,3	4,4-4,5	0,3(0,45)			
300 500	8,4-8,6 	0,9-1,5 C, col.4-5	0,2(0,4) 0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

deflection	rev/min Control	Control rod travel	Intermediate Degree of deffection	rated sp	Controi rod travel	Lower rated Degree of deflection	speed	Control rod	Sliding sleeve travel	
of control lever	rod travel mm 2	mm rev/min 2a 3	of control lever	rev/min 5	mm <b>4</b>	of control lever 7	rev/min 8	mm 3	rev/min 10	mm 11
ca.68	1450 1700	15,2-17,8 0 - 1,0				ca.22	100 300	min.10,0 8,4-8,6		1,1 3,8-4,0
ca.63	8,5 4,0	1490-1500 1565-1595				<u>3</u>	550-6	510 =2,0	1500	8,4

Torque control travel a =

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		limitation intermediate speed			Starting idle switchir	<u> </u>	Torque- travel	control (5)
rev/min	crh³/1000 strokes	rev/min 4e	rev/min	rev/min cm³/1000 strokes r		rev/min cm³/1000 strokes		trave! mm
1	2	3	4	5	6	7	8	9
1450	44,5-45,5 (42,5-47,5)	1490-1500*	500	38,0-41,0 (36,0-43,0)	160	72,25- 82,25	1450 1130 760 500	9,2 9,4 9,9 10,3
					100	-220(80-240)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

WPP 001/4 MB 5.7 v 1 2. Edition

PES6A90D410RS2571

ROV300-1400AB884L

supersedes 2.80

company:

engine

Daimler-Benz OM 352 A

1 - 5 - 3 - 6 - 2 - 4  $0 -60-120-180-240-300 \pm 0,50(0,75)$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings
2,00-2,10
Fortclosing at prestroke (1,95-2,15) mm

mm (from BDC)

		,95-2,15)				
Rotational speed	Control rod travel	Fuel delivery  cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve)
1	2	2	4	2	ciii / lou strokes	mm
1400	12.5	60.60	0,3(0,45)	-	-	0
1400	12,2	6,8 - 6,9	0,3(0,43)			
	10.1		-			-
300	+0,1	0,8 - 1,4	0,2(0,4)			
300	0,4-0,6	0,0 - 1,4				
600		C. col.4-5	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in [

# **B.** Governor Settings

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed		Sliding sleeve travel	
deflection		Control rod travel	of control		Control rod travel	Degree of deflection of control		Control rod travel	Silding	0
		rev/min (28	) lever	rev/min	mm (4)	lever	rev/min	mm (3)	rev/min	mm .
1	2	3	4	5	6	7	8	9	10	11
ca.68	1400 1 <i>7</i> 50	15,2-17,8 0 - 1	-	-	-	ca.11	100 300	min.8,0 6,4-6,6		
ca.54		1440-1450 1575-1605				<b>3</b> a	580·	max. 1,0 -640 =2,0 -440		

Torque control travel a =

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational-speed 2b limitation intermediate speed	Fuel deliv	rery characteristics 5a	Starting idle switchin	. 0	Torque- travel	control 5  Control rod
rev/min	cm³/1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm mm
1	2	3	4	5	6	7	8	9
1400	68,0-69,0 (66,0-71,0)	1440-1450*	600	51,0-53,0 (49,0-55,0)	100	72,25-82,25		
					100-	220(80-240)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

124

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 STE 6,0h 4 1. Edition

EΩ

PE 6 A 85 D 412 RS 2296

RQV 250-1400 AB 1098 L

 $1 - 5 - 3 - 6 - 2 - 4 \text{ je } 60^{\circ}$ 

supersedes

company: Steyr

engine: WD 612.00

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,45-2,65)

mm (from BDC)

		Z.5U-Z.6U				
Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1400	8,8-8,9	6,4 - 6,5	0,3(0,45)			
	7,8-8,0	0,9 - 1,5	0,2(0,4)			
1000 500		C, col. 4-5 C, col. 4-5	0,4(0,55) 0,4(0,55)			
500		C, COI. 4-5	0,4(0,55)			
	Ì					

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

Upper rated	speed		Intermediate	rated sp	ed	Lowe	Lower rated speed				Slidina s	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min 3	Degree of deflection of control lever	rev/min 5	Control rod travel mm	defie of co	ree of ection ontrol f	rev/min	Control retravel	od 3	rev/min	1) mm 11
ca.68	1400 1650	15,2-17, 0 - 1,	-	-	-	ca			min.7, 5,9 -	5 6,1 1	250 450 1450	0,9 2,5-2,7 8,4
ca.44		1440-145 1500-153				(3a)						

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)  rev/min   cm³/1000 strokes		Rotational-speed (2b) limitation intermediate speed rev/min (4a)	(3)		idie switchir		Torque- travel	Control 5  Control rod travel mm
1	2	3	4	5	6	7	8	9
1400	64,5-65,5 (62,5-67,5)	1440-1450*	1000 500	63,5-65,5 (61,5-67,5) 53,5-54,5 (51,5-56,5)	100	99,5-109,5	500 1120	8,8-8,9 9,3-9,4 9,1-9,3 8,8-9,1

Checking values in brackets

\* 1 mm less control rod travel than col. 2



**Testoil-ISO 411** 

# Test Specifications Fuel Injection Pumps 1 and Governors

WPP 001/4 MAN 11,1 h 1

1. Edition

En

PES 6 A 95 D 410 LS2485

RQV 250-1100 AB956L

supersedes

company:M A N engine: D 2566 ME

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

1,50=1,60
Port closing at prestroke (1,45=1,65)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7	12,4 - 12,7	0,3(0,6)			
	+0,1					
250	5,9-6,1	0,8-1,4	0,3(0,5)			:
500		C, 4-5	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	peed		Intermediate	rated sp	ed	Lower rated	speed		Sliding sleeve travel	
	rev/min Control	Control rod (a)	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		0
of control lever	rod travel mm	mm rev/min (2a)	of control lever	rev/min	mm (4	of control lever	rev/min	mm ③	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.50	1120	14,4-17,6	-	-	-	ca.10	100	min.7,2		0,4-1,2
	1300	0 - 1		1				5,6-5,8	800	5,2-5,6
				l		i	310-3	70 = 2,0	1120	8,3
ca.48	10,7	1140-1150		l	Ì		450	0 - 1		
1	4,0	1180-1210	1	l				'	-	-
	1				1					
						(3a)				

Torque control travel a =

mm

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rad stop Test oil temp. 40°C (104°F) 2  rev/min   cm³/1000 strokes		Rotational-speed (2b) limitation intermediate speed			Starting Idle switchin	•	Torque- travel	Control cod travel
1	2	3	4	5	6	mm DW	8	9
1100	123,0-125,0 (121,0-127,0)	1140-1150*	500	113,5-118,5 (111,5-120,5		12,6-13,0 6,0		
					100	-170 (80-190)		

Checking values in brackets

\* 1 mm less control rod travel then col. 2

1.78

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Festoil-ISO 4113

WPP 001/4 1. Edition

PES 6 A 95 D 420 LS 2595

RQ 200/1050 AB 1094

supersedes

company:

engine:

Raba-Ungarn D2156 HM6U

(141,0kW-192PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke

(1.95-2.05)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes	Control rod travel mm 2	Fuel delivery  cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	10,6-10,7	10,3-10,5	0,3(0,6)			
200 800/500	6,9-7,1	1,1- 1,5 C, col.4-5	0,3(0,5) 0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Checkin PRG che rev/min 1	Control ro	od ①	Full-load s Setting po rev/min 3			cifications rev/min 6	4	Idle spec Setting r rev/min 7	Control red travel		cifications 5 Control rod travet mm	rev/min	Control rod (3)
500	19,2-	-20,8	500	20,0	9,6	1095-11	10	200	6,0	100	min.7,5	1050	10,6-10,7
1225	0 -	- 1,0	VB ca	. 49	4,0	1125-11	55			200 350 270-	5,9-6,1 max.1,0 310=2,0	740	10,7-11,0 11,1-11,3 11,3-11,4

Torque-control travel on flyweight assembly dimension a =

0,28 <sub>mm</sub>

Speed regulation: At

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on ontrol lever pp. 40°C (104°F)	Control rod stop	Fuel delivery characteristics			Starting fuel delivery Idle speed		
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5		rev/min 6	red travel cm <sup>3</sup> /1000 strokes:/ mm 7	
1050	102,0-104,0 (100,0-106,0)		800	103,0-106,0 (101,0-108,0)		100	154,0-164,0	
			500	max. 91,5 (max. 91,5)		200 100-140	12,0-16,0 (80 - 160)	

Checking values in brackets

PES 6 A 85 D 410 RS2139Y Festoil-ISO 4113

ROV 250-1250 AB906DL

company: M A N

D 0836 HM7/HM74

156 PS )

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings
1,50-1,60
Port closing at prestroke (1,45-1,65) mm mm (from 8DC)

Rotational speed rav/min 1	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,0	7,0 - 7,2	0,3(0,45)			
	(+0,1)					
250	6,8-7,0	0,8 - 1,4	0,2(0,4)			
800/500		C, 4-5 -	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated a	peed	1	Intermedi	ate rated sp	end	Lower rated	speed	•	Sliding s	leeve travel
deflection	rev/min Control	(UWAG)	Degree o deflection	1	Control rod travel	Degree of deflection	·	Control rod travel		①
of control lever	rod travel	mm rev/min (2	of control lever	rev/min	mm 4	of control lever	rev/min	mm ③	rev/min	mm
1	2	3	4	5	6	7	8	8	10	11
ca.50	1275 1450	14,4-17,4 0 - 1	-	-	-	ca.13	100 250		600	
ca.43		1290-1300 1335-1369					315- 450	375 =2,0 0 - 1	1275 1250	+0,1
	7,0	1000 1000				(3a)			1000 500	

0.7 mm Torque control travel a =

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed 2b limitation intermediate speed	Fuel deliv	very characteristics 5e peed 5b	Starting idle switching		Torque- travel	Control of travel	
rev/min	cm³/1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	DU	rev/min		
<u> </u>	2	3	4	5	6	7 HAH KW	8	9	
1250	71,0 - 72,0 (69,0 - 74,0)	1290-1300	800	73,0 - 76,0 (71,0 - 78,0)	B .	17,7-18,3		1250	
			500	70,0 - 73,0 (68,0 - 75,0)		7,0			

Checking values in brackets

\* 1 mm less control rod travel then col. 2

10.77

**②** 

Testoil-ISO 4113

Test Specifications
Fuel Injection Pumps ②
and Governors

40

WPP 001/4 MB 8,7 c 1 1. Edition

<u>En</u>

supersedes

company:

Daimler-Benz

engine: OM 360

125 kW(170 PS)

RQ 375/1275 AB 658 DL

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump, Settings

PE 6 A 90 D 410 RS 2124 X

Port closing at prestroke

(2,1-2,3)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6		
1250	9.3-9.4	7.7 - 7.8	0,3(0,45)					
375 700	7,4-7,6 10,1+0,1		0,4(0,55)					

Adjust the rust delivery from each outlet according to the values in

## **B.** Governor Settings

PRG ch	eck Control rod I travel	l I		rev/min	Idle speed regulation  Setting point  Control rod travel rev/min 7  Rev/min 7  Test specifications  Control rod travel rev/min 7  Test specifications  Control rod travel mm rev/min 7			Control rod travel mm	Torque of rev/min	Control (3) Control rod travel
700	15,6-16,4	700	16,0	1295-1310 1345-1375	375	7,5	100 375 500 465-	min.9,0 7,4-7,6 max. 0 505=2mm	1250 1075 895 700	9,3-9,4 9,4-9,7 9,8-10,0 10,1-10,2

Torque-control travel on flyweight assembly dimension a =

0,4 <sub>mm</sub>

Speed regulation: At 5-1310 min

1 mm less control rod travel

# C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop	3a Fuel deliv	Fuel delivery characteristics			uel delivery
rev/min	cm³/-1000 strokes	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5		rev/min 6	Control red travel crm <sup>3</sup> /1000 strokes:/ mm 7
1250	77,0-78,0 (75,0-80,0)	650	700	77,0-80,0 (75,0-82,0)		-	-
						۰	

Checking values in brackets

4.81

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WPP 001/4 OMB 8,1 a

1. Edition

PES 6 A 90 D 410 RS 2494

RQ 275/1300 AB 1034 DL

supersedes

OM-Brescia 8360.05.291

engine:

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

(2.1 - 2.3)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	12,4+0,1	7,05-7,15	0,3(0,45)			
275 700	8,3-8,5	0,4 - 0,9	0,2(0,4)			
500	13,4-0,1	C, col.4-5	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Checkin PRG che rev/min 1	Control rod travel rev/min 2 3 4 5 6		l (i)	Idle speed regulation Setting point Test specifications Control rev/min mm 7 8 9 10			Control rod travei mm	Control rod (3) rev/min   mm   11   12			
700	15,6-16,4	700	16,0		1345-1360 1450-1480 0 - 1,0	275		100 275 600 465-	min.7,5 5,9-6,1 max.1,0 505=2,0	810 710	12,4+0,1 12,6+0,3 13,3+0,1 13,4+0,2

Torque-control travel on flyweight assembly dimension a =

4 mm Speed regulation 1345-1360 min-1

1 mm less control rod travel

# C. Settings for Fuel Injection Pump with Fitted Governor

governor	Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	3	Fuel delive	ery characteristics	<b>3</b> b	Starting fuel delivery Idle speed		
rev/min 1	cm <sup>3</sup> /-1000 strokes 2		rev/min 3		rev/min 4	cm <sup>3</sup> /-1000 strokes 5		rev/min 6	Control red travel cm <sup>3</sup> /1000 strokes:// mm	
1300	70,5-71,5 (68,5-73,5)		500		700 500	71,5-74,5 (69,5-76,5) 65,5-68,5 (63,5-70,5)		100	20,0 - 21,0 mm RW	

Checking values in brackets

5.81

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# ② Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MAN 11.1 b 3

1. Edition

PES 6 A 95 D 410 LS 2409

RQ 250/1150 AB 869 DL

supersedes '

company MAN

engine

D 2556 MXE 232 PS

igine 232

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 411

1,3+0,1

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	. 9	7,4 - 8,0	0,4			
	6	3,2-4,2				
200	6	0,5-1,4		,		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Checkin rev/min 1	Control rod	Full-load s Setting po rev/min 3		Test spec	cifications Control rod travel mm		Control rod travel	Test spe	cifications Control rod travel mm 10	rev/min	control Control rod travel mm 12
600	15,7-16,3	600	16,0	1170 1200 1250 1320	15,6-16,0 11,0-15,0 0 - 9,6 0	1	0	150 250 350 450	6,5-8,1 4,7-6,9 1,7-4,2 0	-	-

Torque-control travel on flyweight assembly dimension a

mm

1190-1205 min -1 Speed regulation: At

1 mm less control rod travel

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de governor c	elivery on ontrol lever np. 40°C (104°F)	Control rod stop	Fuel delive	ery characteristics	Starting fuel delivery		
rev/min	cm³/-1000 strokes	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes 5	rev/min	cm <sup>3</sup> /1 <b>000\$</b> rokes 7	
1150	121,5 - 123,5		500	max. 118,5	100 250	11 - 12 7 mm RW	

Checking values in brackets

3.81

BOSCH

L12

2

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 OMB 8,1 a 1

1. Edition

En

PES 6 A 90 D 410 RS 2494

RQ 275/1300 AB 969 DL

supersedes

company:

OM-Brescia 8360,05.200

engine:

118 kW (160PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke

(2.10-2.30)

mm (from BDC)

Rotational speed rev/min	Control rod travel • mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes	Control rod travel mm 2	Fuel delivery  cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	13,2+0,1	8,0 - 8,1	0,3(0,45)			
275 700	8,3-8,5 13,6+0,2		0,2(0,4)			
500	14,0+0,1	C, col.4-5	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in

# **B.** Governor Settings

Checkin PRG che rev/min 1	Control rod travel	Full-load s Setting po rev/min 3		_	cifications (4) rev/min 6	Idle spee Setting p rev/min 7	Control rod travel	Test spe	cifications 5 Control rod travel mm	Torque o	Control rod
900	13,6-15,0	900	14,3		1345-1360 1440-1470 0 - 1,0	275		275 600	min.7,3 5,7-5,9 max.1,0 80=2,0mm	700	13,2+0,1 13,6+0,2 14,0+0,1

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation: At 1345-1360 min-1

1 mm less control

# C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on ontrol lever np. 40°C (104°F)	Control rod stop 3a	Fuel delive	ery characteristics 3b	Starting f	
rev/min 1	cm <sup>3</sup> /-1000 strakes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	Control rad travel cm <sup>3</sup> /1000 strokes:// mm 7
1300	80,0 - 81,0 (78,0 - 83,0)	•	700 500	77,5 - 80,5 (75,5 - 82,5) 71,5 - 74,5 (69,5 - 76,5)	100	109,25-119,25

Checking values in brackets

5.81

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